## DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

# OFFICE OF DESIGN POLICY & SUPPORT INTERDEPARTMENTAL CORRESPONDENCE

FILE P.I. # 0013194

OFFICE Design Policy & Support

Fulton County

GDOT District 7 - Metro Atlanta

**DATE** 12/1/2015

Intersection Improvements: SR 9 at

Glenridge Drive

FROM

for Brent Story, State Design Policy Engineer

TO SEE DISTRIBUTION

#### SUBJECT APPROVED CONCEPT REPORT

Attached is the approved Concept Report for the above subject project.

#### Attachment

#### DISTRIBUTION:

Glenn Bowman, Director of Engineering

Joe Carpenter, Director of P3/Program Delivery

Genetha Rice-Singleton, Assistant Director of P3/Program Delivery

Albert Shelby, State Program Delivery Engineer

Darryl VanMeter, State Innovative Delivery Engineer

Bobby Hilliard, Program Control Administrator

Cindy VanDyke, State Transportation Planning Administrator

Hiral Patel, State Environmental Administrator

Andrew Heath, State Traffic Engineer

Angela Robinson, Financial Management Administrator

Lisa Myers, State Project Review Engineer

Charles "Chuck" Hasty, State Materials Engineer

Lee Upkins, State Utilities Engineer

Richard Cobb, Statewide Location Bureau Chief

Ed David Adams, State Safety Program Manager

Kathy Zahul, District Engineer

Scott Lee, District Preconstruction Engineer

Nicolas Fields, District Utilities Engineer

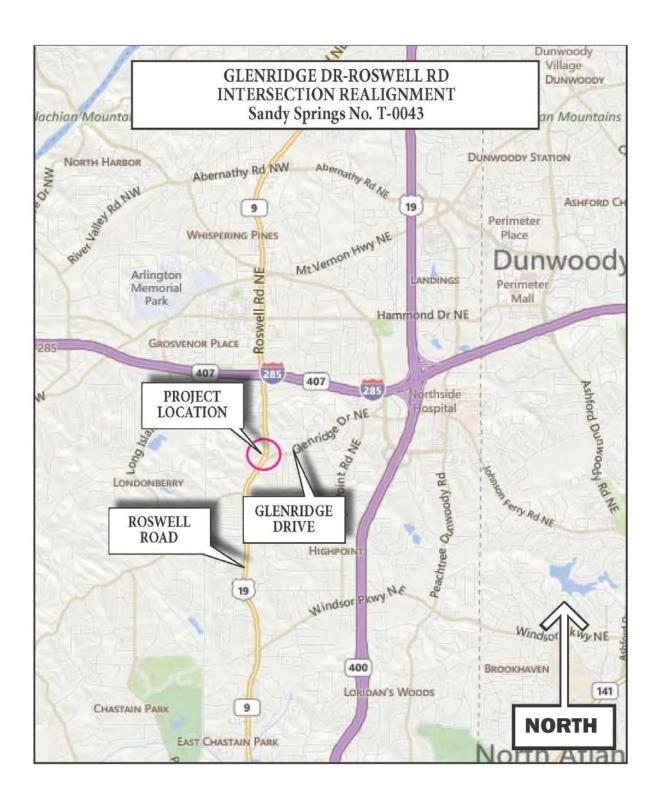
Sam Samu, Project Manager

BOARD MEMBER - 6th Congressional District

## DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA LIMITED SCOPE PROJECT CONCEPT REPORT

Project Type: Safety GDOT District: 7 Federal Route Number: 19 Project Number:	P.I. Number: County: State Route Number:	Fulton
This project will improve the intersection of Roswell R Drive approach and making safety and operation driveways.	oad @ Glenridge Drive by al improvements to both	realigning the Glenridge roadways and nearby
Submitted for approval:  Consultant Designer & Firm		9/17/15 DATE 18/2015
Local Government Sponson  Collect State Program Delivery Engineer  State Program Delivery Engineer		DATE 9/24/15 DATE N9/23/2015
GDOT Project Manager	1 / DCIDA	DATE
Recommendation for approval:  HIRAL PATEL  State Environmental Administrator  KEN WERHO  State Traffic Engineer		10 4 2015 DATE 10 1 2015
The concept as presented herein and submitted for a the Regional Transportation Plan (RTP) and/or the State Transportation Planning Administrator	approval is consistent with the Transportation Improven	that which is included in nent Program (STIP).  LOLUZOIS  DATE
Approval:  Concur:   GDOT Director of Engineering		11/17/2015 DATE
Approve: Marcaret B.  GDOT Chief Engineer	Perkle	DATE DATE
* RECOMMENDATION O	WALE-0	HBN

## PROJECT LOCATION



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County: Fulton

## PLANNING & BACKGROUND DATA

**Project Justification Statement:** This project will realign Glenridge Drive so that it will line up with a nearby condominium complex's driveway. It will convert two closely spaced 3-legged intersections into a single four-legged intersection. This project will provide a more appropriate intersection angle as well as adequate left turn lanes in the northbound and southbound directions. Additionally, this improvement has the advantage of retaining full access for the condominiums. The construction of this project has the potential to reduce the number of serious crashes at this intersection. The concept design, as discussed on this report, is consistent with the long term improvement option that was recommended in the Traffic Engineering Study that was prepared by the City of Sandy Springs on 5/21/12 and is included as Attachment 6.

## **Existing conditions:**

## **Facility Description**

The intersection of SR 9 and Glenridge Drive is a signalized 3-leg intersection located in the City of Sandy Springs, Georgia. According to the Georgia Department of Transportation (GDOT) Road Classification (RC) database, the functional classification of SR 9 is Urban Arterial Street and Glenridge Drive is classified as Minor Urban Arterial Street. The intersection has an undesirable skew angle (40 degrees). Additionally, there is a condominiums driveway located approximately 160 feet north of the intersection on the west side of SR 9, resulting in back-to-back left turn lanes on SR 9 that are a combined 110 feet in length.

SR 9 is a five-lane roadway section running north-south. It is a heavily travelled major arterial which connects the City of Atlanta to the City of Sandy Springs and has interchange access to I-285. SR 9 has 10-foot wide lanes, curb and gutter, and a posted speed limit of 35 miles per hour (mph). At its intersection with Glenridge Drive, SR 9 has two through lanes and one left turn lane in the southbound direction; and two through lanes in the northbound direction.

Glenridge Drive is an urban roadway section with a varying cross section that runs east-west. It has 11-foot wide lanes, curb and gutter, and a posted speed limit of 35 mph. At its intersection with SR 9, Glenridge Drive has two left turn lanes and a single right turn lane.

#### **Traffic Control**

The intersection of SR 9 and Glenridge Drive is controlled by a traffic signal. This traffic signal is part of a coordinated signal system along SR 9. There is a protective/permissive left-turn phase for southbound approach. There are pedestrian phases across the east and north legs of the intersection. The northbound and westbound right-turn movements are channelized and are yield controlled.

The lack of a northbound right-turn lane limits the effectiveness of the right-turn channelization, since most of the right-turning traffic is trapped in the approach queue along with the northbound through traffic. There is a set of supplemental signal heads for the southbound movement approximately 245 feet north of the intersection.

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#### **Traffic Volumes**

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Annual Average Daily Traffic (AADT) volumes for SR 9 and Glenridge Drive were obtained from GDOT's State Traffic and Report Statistics (STARS); these volumes are provided in the Table 1.

Table 1: Average Annual Daily Traffic Volumes:

Location	Traffic Counter	2005	2006	2007	2008	2009	2010	2011	2012
SR 9 south of Glenridge Dr	TC 5116	38,400	33,420	34,900	33,280	32,340	43,710	44,130	33,530
Glenridge Drive between SR 9 and Johnson Ferry Rd	TC 125	16,730	15,880	15,880	15,790	17,270	17,050	17,030	16,940

#### **Pedestrian Movement**

Sidewalks and pedestrian ramps are currently provided along the east side of SR 9, and along the north side of Glenridge Drive. The intersection has two signalized pedestrian crossings; one across the east leg and another across the north leg.

## **Parking**

There is no designated on-street parking along neither SR 9 nor Glenridge Drive in the immediate vicinity of the intersection.

## **Crash History**

Crash data for the intersection of SR 9 and Glenridge Drive for the most recent available five-year period (2009-2013) was obtained from the City of Sandy Springs, due to the detailed crash information. 2014 data was not available at the time of this report. Table 2 summarizes the crash rate for the immediate intersection vicinity along Roswell Road, and compares it with the statewide average rate for the functional classification for the Roswell Road intersection legs. The vast majority of crashes in the vicinity of the intersection took place on the Roswell Road approaches.

Table 2: Accident Rate Summary (Per 100,000,000 Vehicle Miles Traveled) – Roswell Road @ Glenridge Drive

Year	Number of Crashes	Computed Crash Rate on Roswell Rd	Statewide Average Rate (Urban Principal Arterial, NHS)
2009	23	718	461
2010	36	1124	408
2011	35	1093	422
2012	37	1155	461
2013	58	1811	408
Average	38	949	432

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As can be seen in Table 2, the crash rate on the section of Roswell Road through the intersection is higher than the statewide average, nearly double for each year. Table 3 identifies the individual crash type.

Table 3: Summary of Crashes: Intersection of Roswell Road at Glenridge Drive

	Total		Crash Type					
Year	Crashes	Sideswipe – Same Dir.	Rear End	Angle	Head On	NCMV	Tot. Injuries	Fatality
2009	23	4	13	3	2	1	5	0
2010	36	5	11	17	1	2	16	0
2011	35	3	16	15	0	1	11	0
2012	37	1	20	14	0	2	13	0
2013	58	4	29	20	0	5	No Info	0
2014	40	4	19	12	2	3	No Info.	0

Review of the crash history revealed a high number of angle crashes. A total of 81 angle crashes occurred in the six-year period with 46 of the crashes occurring during the most recent three-year period. The majority of angle crashes appear to be attributed to the inadequate storage for the southbound left turn lane, being that southbound is the most predominant direction of travel identified in the raw data. The lack of vehicle storage influences motorists to misjudge gaps and force the left turn maneuver due to excessive delays for this movement.

Many of the rear end and sideswipe crashes are also likely related to queue spillbacks, being that a large number of these accidents occurred in the southbound direction. The lack of left-turn storage would contribute to the number of rear-end collisions, since many of the left-turning vehicles are "stopped" in one of the through lanes.

The advanced southbound stop bar and traffic signal heads are located over 200' north of the main intersection. This contributes to the general confusion within the intersection area. Also the lack of left-turn storage contributes to the number of crashes.

The construction of this project would reduce the potential for crashes by providing adequate left-turn storage for southbound vehicles, reduce most of the "stopped" vehicles from the through lanes. Also, the elimination of the offset side street approaches will eliminate the northbound "stopped" vehicles blocking the intersection immediately north of Glenridge Drive.

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## **Capacity Analysis**

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The methodology used for evaluating traffic operations at the subject intersection is based on criteria set forth in the Transportation Research Board's *Highway Capacity Manual*. The following is a description of methodology employed for the analysis of the subject intersection.

### **Signalized Intersections:**

For signalized intersections, Level of Service (LOS) is defined in terms of average control delay per vehicle, which is composed of initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The following table presents LOS criteria for signalized intersections as they are defined by average control delay. LOS A indicates operations with very low control delay, while LOS F describes operations with extremely high average control delay. Table 4 summarizes LOS criteria for signalized intersections.

**Table 4: Level of Service Criteria for Signalized Intersections:** 

Level of Service	Average Control Delay (sec/veh)			
A	<= 10.0			
В	>10.0 and <=20.0			
С	>20.0 and <=35.0			
D	>35.0 and <=55.0			
E	>55.0 and <=80.0			
F	>80.0			

The intersection was analyzed for the signalized condition using existing volumes and intersection geometry. The intersection operations LOS were determined for the morning and evening peak hours. Table 5 summarizes the existing traffic operations at the intersection.

Table 5: 2015 – Existing Level of Service and Control Delay (Seconds):

AM Peak						
Roswell Rd (SR 9)	NB	F	241.9			
Roswell Rd (SR 9)	SB	Е	57.1			
Glenridge Drive	WB	Е	59.4			
Overall Intersection	-	F	134.2			
	PM Peak					
Roswell Rd (SR 9)	NB	F	199.7			
Roswell Rd (SR 9)	SB	C	31.6			
Glenridge Drive	WB	F	137.7			
Overall Intersection	-	F	125.0			

The analysis shows for the existing conditions an overall LOS of "F" for the a.m. peak hour and "F" for the p.m. peak hour. Considering the congested conditions in the project vicinity, this intersection appears to operate with relatively "moderate" congestion, being that the LOS "F" in both peak periods are not associated with extremely high delays. The northbound movements are the highest mainline delays, being that the heavy right-turn movement is shared with the higher through movement.

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The levels of service on Table 5 indicate the inability of this intersection to accommodate the traffic demand, despite the lack of consideration of the offset intersection with the condo driveway on the west side, the minimal available storage on the southbound approach with its associated through lane blockages, and the tight geometry on the east (Glenridge Drive) approach.

For the design year of 2039, both peak hours along with the individual approaches would still operate at LOS "F" (Table 6). The corresponding delay increases along with the higher traffic demand. However, as per the discussion for the existing traffic, the actual congestion will be greater due to the deficiencies already discussed for the existing intersection configuration.

Table 6: 2039 – "No-Build" I	Level of Service and	Control Delay (Seconds):
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AM Peak						
Roswell Rd (SR 9)	NB	F	457.7			
Roswell Rd (SR 9)	SB	F	108.7			
Glenridge Drive	WB	F	120.0			
Overall Intersection	-	F	255.2			
PM Peak						
Roswell Rd (SR 9)	NB	F	283.4			
Roswell Rd (SR 9)	SB	F	81.6			
Glenridge Drive	WB	F	242.9			
Overall Intersection	-	F	201.0			

This project would improve the overall LOS for both peak hours with a substantial reduction in the corresponding delay (Table 7). The amount of improvement would likely be greater when comparing the "No-Build" and "Build" tables, due to the elimination of the delay and congestion beyond what is predicted from the LOS analysis.

Table 7: 2039 – "Build" Level of Service and Control Delay (Seconds):

AM Peak						
Roswell Rd (SR 9)	NB	C	29.7			
Roswell Rd (SR 9)	SB	С	23.8			
Glenridge Drive	WB	F	91.0			
Overall Intersection	-	D	40.2			
	PM Peak					
Roswell Rd (SR 9)	NB	Ш	72.5			
Roswell Rd (SR 9)	SB	D	54.6			
Glenridge Drive	WB	F	113.3			
Overall Intersection	-	Ш	77.4			

The overall LOS at this intersection would improve from "F" to "D" during the a.m. peak hour. The LOS would improve from "F" to E" during the p.m. peak hour.

### **Roundabout:**

The intersection of Roswell Road @ Glenridge Drive has been analyzed to determine if a roundabout would perform acceptably. The analysis indicated that a two-lane roundabout would operate at an overall level of service "F for both the a.m. and p.m. peak hours for the design year of 2039. Methodology used is as described in the 2010 edition of the *Highway Capacity Manual*. Due to poor

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level of service as well as severe right-of-way and property access issues, the use of a roundabout is not recommended at this intersection.

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## Other projects in the area:

SR 9 from Atlanta City Limits to Abernathy Road – GDOT- Traffic Signal Optimization – PI#0012629 – Construction 2015

I-285 Interchange @ Roswell Rd – GDOT – PI#0000247 – Long Range

## Description of the proposed project:

This project will relocate the Glenridge Drive approach along SR 9 (Roswell Road) approximately 130' north of its existing location. It will provide dual southbound left-turn lanes on the Roswell Road approach and two eastbound receiving lanes on eastbound Glenridge Drive as it leaves the intersection in the eastbound direction. A northbound right-turn lane will be provided along Roswell Road for vehicles turning eastbound onto Glenridge Drive.

The existing corner island in the southeast quadrant of the intersection will be removed as part of this project. This will remove the existing "flat" angle for the vehicles turning onto Glenridge Drive that is "Yield" sign controlled. This change will also provide a better pedestrian crossing that is controlled by the traffic signal.

This project will improve the Glenridge Drive alignment as it approaches Roswell Road by improving the existing 90' radius along the existing approach curve to approximately 225'. The intersection (skew) angle will be improved to 80 degrees, while a 70 degree intersection angle will be provided between the Condominium approach and Roswell Road.

An additional eastbound receiving lane on Glenridge Drive will be constructed for a distance of at least 500' east of the intersection, from which the right lane would then merge into a single through lane.

This project follows the Long-Term Option recommendation from the 2012 Traffic Engineering Study prepared by the City of Sandy Springs. This study is incorporated as Attachment 6 to this report.

MPO: Atlanta Regional Commission TIP #: AR-118-2019

TIA Regional Commission: N/A

Congressional District(s): 6

Federal Oversight: ☐ Exempt ☐ State Funded ☐ Other

Projected Traffic: ADT

Current Year (2015): 35,100 Open Year (2019): 36,520 Design Year (2039): 46,820

Traffic Projections Performed by: Qk4 - Approved on 5/11/2015

None

Functional Classification (Mainline): Urban Principal Arterial – SR 9 (Roswell Rd) (Side Road): Urban Minor Arterial Street - Glenridge Drive Complete Streets - Bicycle, Pedestrian, and/or Transit Warrants: □ Pedestrian Warrants met: None Bicycle DESIGN AND STRUCTURAL Description of Proposed Project: Roswell Road @ Glenridge Drive Intersection Improvement Major Structures: None Mainline Design Features: Roswell Road / Glenridge Drive Existing **Feature** Proposed **Typical Section Number of Lanes (Through Lanes** 4/2 4/2 10' / 12' 10' / 11' Lane Width(s) Median Width & Type Flush / None Flush / Variable - Outside Shoulder or Border Area Width 10' approx. 11' Urban (Min.) - Outside Shoulder Slope 2% approx. 2% - Sidewalks 5' on E side/ 4' 6' Min - 9' Max. - Auxiliary Lanes NONE / NONE NONE / NONE NONE / NONE **Bike Lanes** NONE / NONE 35 MPH / 35 MPH 35 MPH / 35 MPH **Posted Speed** 35 MPH / 35 MPH **Design Speed** N/A Min Horizontal Curve Radius 970' / 80' 970' / 225' NONE / NONE Exist. / 4% **Maximum Superelevation Rate** 4.96% / 2.8% **Maximum Grade** 5% / 3% NONE **Access Control** None Design Vehicle N/A WB-40/Bus Major Interchanges/Intersections: SR 9 (Roswell Road) @ Glenridge Drive **Lighting required:** ⊠ No Yes Transportation Management Plan [TMP] Required: No Yes If Yes: Project classified as: Non-Significant Significant TMP Components Anticipated: X TTC TO Will Context Sensitive Solutions procedures be utilized?  $\bowtie$  No ☐ Yes Design Exceptions to FHWA/AASHTO controlling criteria anticipated: Horizontal Curvature: Proposed horizontal curve on Glenridge Drive approach to Roswell Road is 225', versus 371' minimum radius in green book for 35 MPH.

**Design Variances to GDOT Standard Criteria anticipated:** 

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UTILITY AND PROPERTY Femporary State Route Needed:	⊠ No	☐ Yes	Undetermi	ned
Railroad Involvement: None				
Utility Involvements:				
SUE Required: 🖂 No	Yes			
Public Interest Determination Pol	icy and Proce	dure recomme	nded? 🛭 No	Yes
<b>Right-of-Way:</b> Existir Required Right-of-Way anticipated: Easements anticipated: ☐ None		5ft ⊠ Yes y ⊠ Permanen	Proposed wid Undetermi t Utility	
Anticipated Displacements a	number of imp nticipated:	acted parcels: Total: Businesses: Residences: Other:	6 0 0 0	
ENVIRONMENTAL AND PI Anticipated Environmental Docur GEPA: NEPA		☐ PC	E	
MS4 Compliance – Is the project	located in an I	MS4 area?	□No	⊠ Yes
Environmental Permits, Variance	s, Commitmer	nts, and Coord	ination anticip	oated:
Air Quality:  Is the project located in a PN Is the project located in an C Is a Carbon Monoxide hotsp (if any of the above are answ	ot analysis req	inment area? uired?	☐ No ☐ No ☐ No s may be requi	⊠ Yes ⊠ Yes ⊠ Yes ired)

## **NEPA/GEPA Comments & Information:**

It is anticipated that the project would be cleared as CE NEPA document, and may potentially meet the standards of a PCE. Standard history and archaeology surveys would be completed. It is anticipated that the findings for the cultural resource surveys would be no effect.

A full Ecology Resource Survey Report and Assessment of Effect is expected. Protected species surveys are not anticipated to be required.

The project is an intersection improvement and is not expected to be a "Project of Concern" per the Transportation Conformity Rule. Thus it is expected that it will meet the statutory and regulatory requirements for PM 2.5 hotspots without a quantitative analysis. CO modeling will be necessary and an air assessment will be prepared. The project does not meet the thresholds for a full noise study; therefore, a Type III noise screening is anticipated.

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**Public Involvement:** PIOH not required as per NEPA. City of Sandy Springs has held a PIOH on 4/29/15, and City may hold an additional PIOH in future.

## COORDINATION, ACTIVITIES, RESPONSIBILITIES, AND COSTS

**Project Meetings:** Project Kickoff Meeting held with GDOT personnel on 1/22/15. Meeting minutes included in Attachment 8.

Project Activity	Party Responsible for Performing Task(s)					
Concept Development	City of Sandy Springs					
Design	City of Sandy Springs					
Right-of-Way Acquisition	City of Sandy Springs					
Utility Relocation	City of Sandy Springs / UTILITY DWINE					
Letting to Contract	Georgia DOT					
Construction Supervision	Georgia DOT					
Providing Material Pits	Georgia DOT					
Providing Detours	Georgia DOT					
Environmental Studies, Documents, & Permits	City of Sandy Springs					
Environmental Mitigation	City of Sandy Springs					
Construction Inspection & Materials Testing	Georgia DOT					

**Project Cost Estimate and Funding Responsibilities:** 

	Breakdown of		Reimbursable		Environmental	
	PE	ROW	Utility	CST*	Mitigation	Total Cost
Funded	City of Sandy	City of Sandy	City of Sandy	Georgia DOT	City of Sandy	
Ву	Springs	Springs	Springs	4,	Springs	
\$ Amount	\$ 150,000	\$990,000	\$ 185,000	\$ 1,026,520	None Anticipated	\$ 2,351,520
Date of	8/12/2015	8/11/2015	8/11/2015	9/18/2015	N/A	
Estimate						

<sup>\*</sup>CST Cost includes: Construction, Engineering and Inspection, and Liquid AC Cost Adjustment.

## **ALTERNATIVES DISCUSSION**

7.2.1 2.1.1.1.1.1.1.2 2.10 2.0 2.0 1.0 1.				
Preferred Alternative: Alternative C in Qk4 Intersection Alternative Analysis (Attachment 7)				
Estimated Property Impacts: 6 parcels Estimated Total Cost: \$ 1,090,620				
Estimated ROW Cost:	\$ 369,740	Estimated CST Time:	12 Months	
Rationale: Provided dual southbound left-turn lanes on Roswell road at minimal cost increase over Alt. A by				
utilizing existing pavement on Roswell Road.				

No-Build Alternative:					
Estimated Property Impacts:	None	Estimated Total Cost:	\$ 0		
Estimated ROW Cost:	\$ 0	Estimated CST Time:	\$ 0		
Rationale: Did not meet purpose and need of project, did not address existing safety and congestion issues					

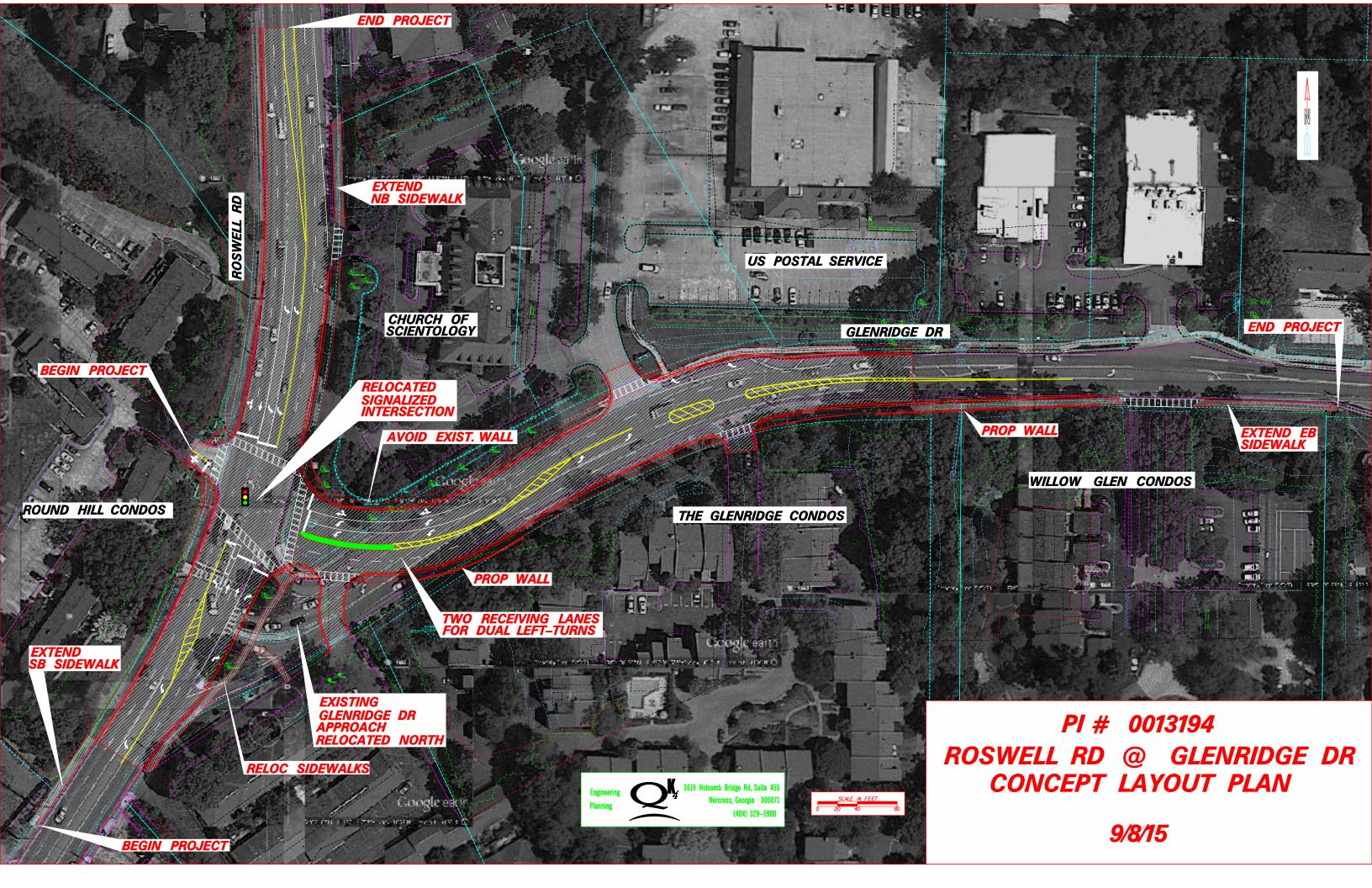
Alternative A: Included in Qk4 Intersection Alternative Analysis (Attachment 7)				
Estimated Property Impacts: 6 parcels Estimated Total Cost: \$ 995,817				
Estimated ROW Cost:	\$ 309,930	Estimated CST Time:	12 Months	
Rationale: Alternate A only provided a single southbound left-turn lane on Roswell Road, while traffic demand is for dual left-turn lanes.				

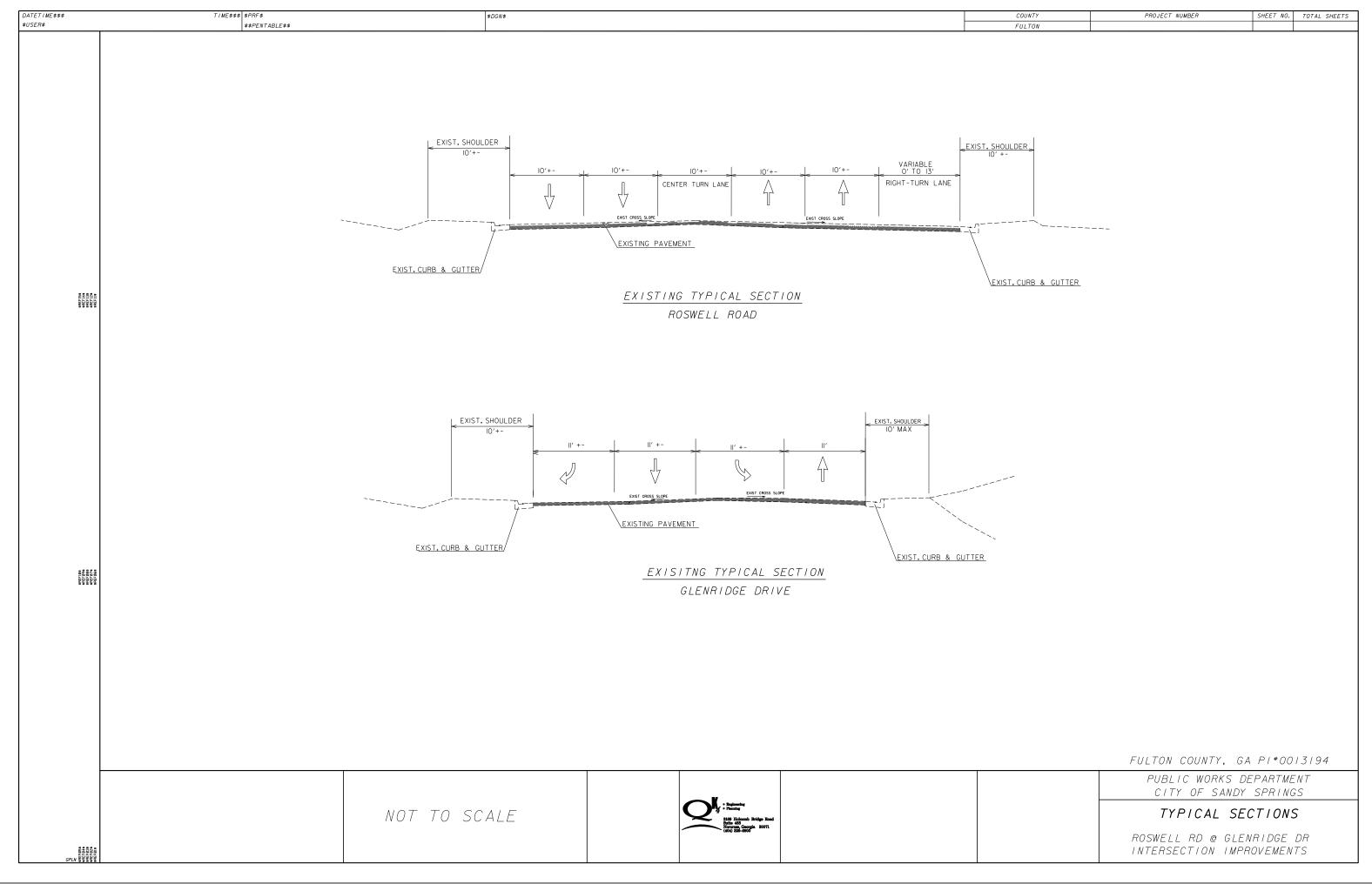
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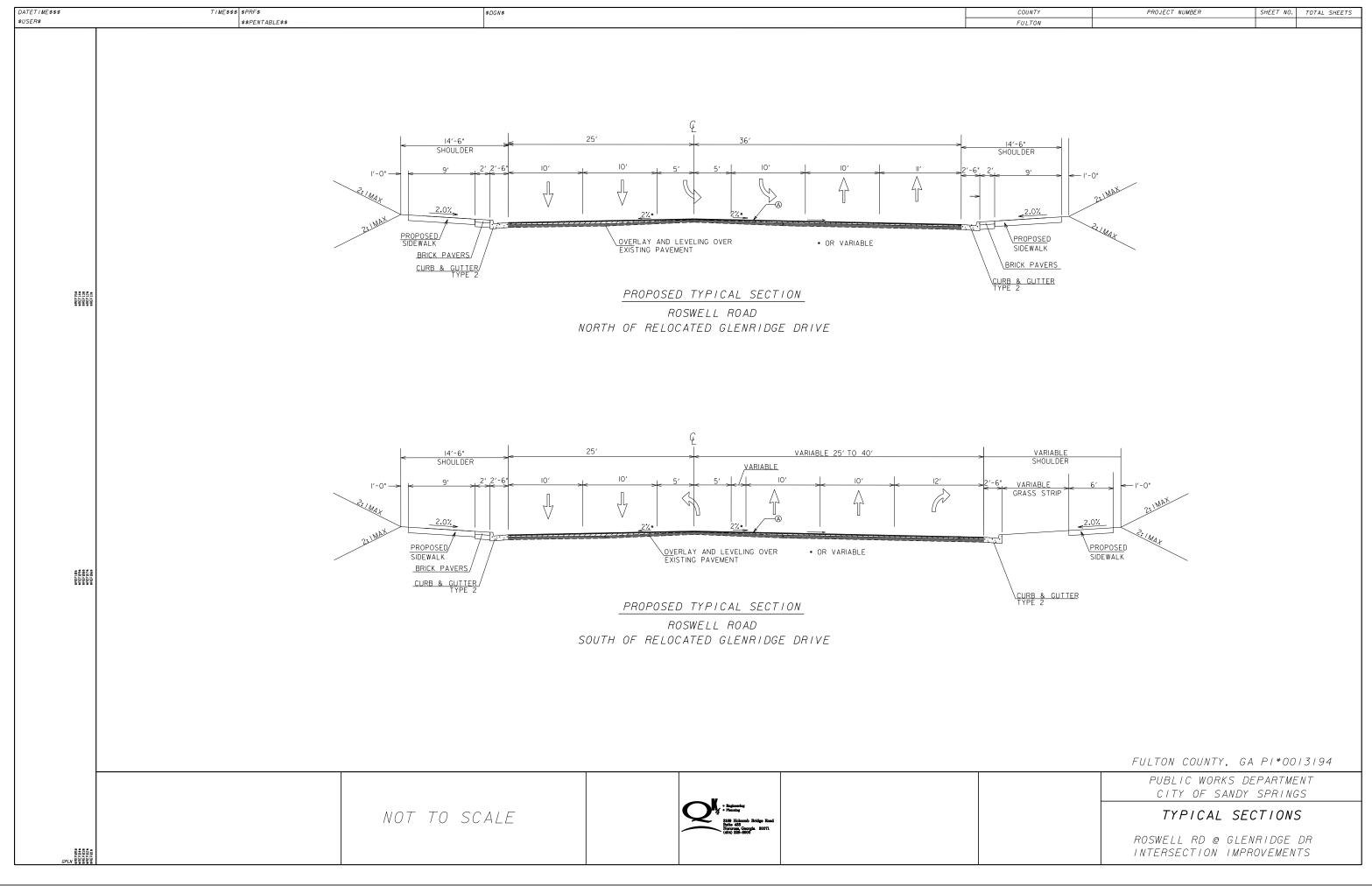
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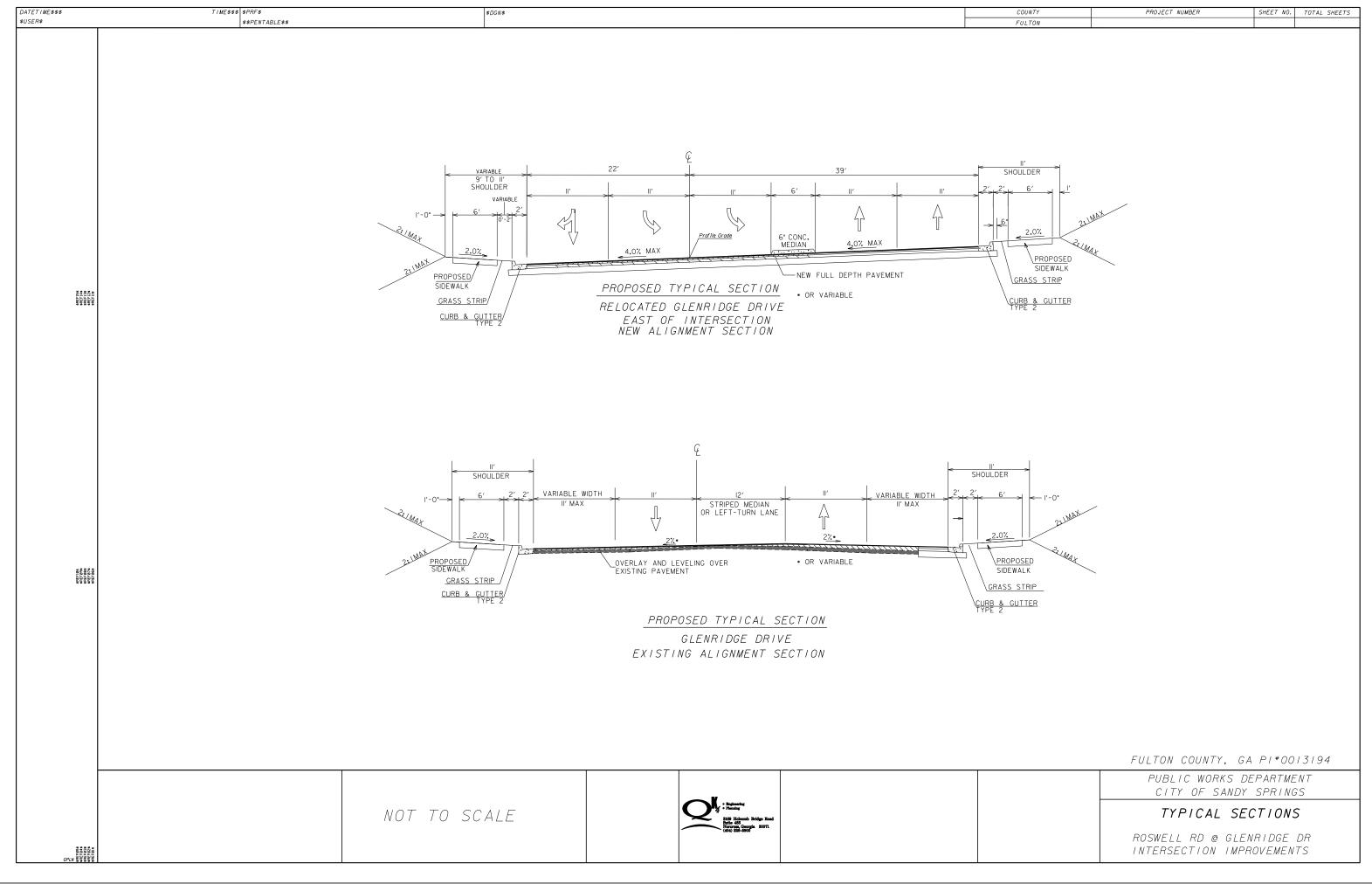
## LIST OF ATTACHMENTS/SUPPORTING DATA

- 1. Concept Layout
- 2. Typical sections
- 3. Cost Estimates
- 4. Traffic diagrams or projections
- 5. City of Sandy Springs TE Study 5/21/12
- 6. Qk4 Intersection Alternative Analysis Summary 12/11/13
- 7. Meeting Minutes









# DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

## INTERDEPARTMENT CORRESPONDENCE

FILE P.I. No.	*0013194	OFFICE	Program Delivery
PROJECT DESCR	IPTION		
SR 9/US 19 @ CS 33	51/GLENRIDGE DRIVE	DATE	September 17, 2015
From: Albert V. S	Shelby, III, State Program Delivery Engine	ely Autot for	
To: Lisa L. My	vers, State Project Review Engineer		
Subject: REVISION	NS TO PROGRAMMED COSTS		
		MGMT LET DATE	10/15/2018
PROJECT MANAG	ER Sam Samu	MGMT ROW DATE	7/15/2017
PROGRAMMED C	COSTS (TPro W/OUT INFLATION)	LAST	ESTIMATE UPDATE
CONSTRUCTION	\$ 1,343,932.74	DATE	10/14/2014
RIGHT OF WAY	\$ 402,538.50	DATE	10/14/2014
UTILITIES	\$ 100,000.00	DATE	10/14/2014
REVISED COST E	<u>STIMATES</u>		
CONSTRUCTION*	\$ 1,026,520.42		
RIGHT OF WAY	\$ 990,000.00		
UTILITIES	\$ 185,000.00		
*Cost Contains	5 % Contingency		

## REASONS FOR COST INCREASE AND CONTINGENCY JUSTIFICATION:

Overall construction cost estimate has decreased. A five percent (5%) Engineering & Inspection (E&I) has been applied. Another five percent (5%) contingency has also been applied due this project type (Safety & Realignment) and its development stage (Concept). Right-of-way cost estimate and the Utility reimbursement have increased, mainly due to the normal course of this project development.

## **CONTINGENCY SUMMARY**

CONSTRUCTION 911,037.17 Base Estimate From CES **ENGINEERING AND** Base Estimate (A) x 45,551.86 5 % **INSPECTION (E & I):** 47,829.45 **C. CONTINGENCY:** Base Estimate (A) + E & I (B) x See % Table in "Risk Based Cost **Estimation**" Memo TOTAL LIQUID AC Total From Liquid AC Spreadsheet 22,101.94 **ADJUSTMENT:** 

## REIMBURSABLE UTILTY COSTS

1,026,520.42

(A + B + C + D = E)

UTILITY OWNER	REIMI	BURSABLE COST
Georgia Power	\$	120,000.00
Atlanta Waterworks	\$	65,000.00
TOTAL	\$	185,000.00
ATTACHMENTS:		
Detailed Cost Estimate Printout From TRAQS Liquid AC Adjustment Spreadsheet		
Preliminary Utility Cost Estimate		

LOC Acquisition ROW cost estimate

Other

**E. CONSTRUCTION TOTAL:** 

gals/ton

232.8234

232.8234

232.8234

tons

0

0

0

22,101.94

\$

Bitum Tack

TOTAL LIQUID AC ADJUSTMENT

Single Surf. Trmt.

Double Surf.Trmt. Triple Surf. Trmt SY

Gals/SY

0.20

0.44

0.71

Gals

0

0

0

## **DETAILED COST ESTIMATE**



## Job: 0013194CONCEPT

JOB NUMBER 0013194CONCEPT FED/STATE PROJECT NUMBER

SPEC YEAR: 01

**DESCRIPTION**: ROSWELL ROAD @ GLENRIDGE DRIVE INTERSECTION IMPROVEMENT

## **ITEMS FOR JOB 0013194CONCEPT**

#### 01 - LUMP ITEMS

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0005	150-1000	1.000	LS	\$10,000.00000	TRAFFIC CONTROL - 0013194	\$10,000.00
0010	210-0100	1.000	LS	\$150,000.00000	GRADING COMPLETE - 0013194	\$150,000.00
					SUBTOTAL FOR LUMP ITEMS:	\$160,000.00

#### 02 - ROADWAY

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0020	310-5080	700.000	SY	\$16.76604	GR AGGR BS CRS 8IN INCL MATL	\$11,736.23
0045	402-1812	350.000	TN	\$76.79597	RECYL AC LEVELING,INC BM&HL	\$26,878.59
0035	402-3121	760.000	TN	\$67.39712	RECYL AC 25MM SP,GP1/2,BM&HL	\$51,221.81
0030	402-3130	260.000	TN	\$77.77121	RECYL AC 12.5MM SP,GP2,BM&HL	\$20,220.51
0040	402-3190	250.000	TN	\$74.42499	RECYL AC 19 MM SP,GP 1 OR 2 ,INC BM&HL	\$18,606.25
0049	413-1000	200.000	GL	\$3.37729	BITUM TACK COAT	\$675.46
0060	441-0016	490.000	SY	\$33.20560	DRIVEWAY CONCRETE, 6 IN TK	\$16,270.74
0015	441-0104	2090.000	SY	\$26.95759	CONC SIDEWALK, 4 IN	\$56,341.36
0065	441-0748	66.000	SY	\$43.14744	CONC MEDIAN, 6 IN	\$2,847.73
0050	441-6216	1620.000	LF	\$13.27767	CONC CURB & GUTTER/ 8"X24"TP2	\$21,509.83
0055	441-6222	1260.000	LF	\$15.58077	CONC CURB & GUTTER/ 8"X30"TP2	\$19,631.77
0025	900-0039	2160.000	SF	\$12.04563	BRICK PAVERS	\$26,018.56
					SUBTOTAL FOR ROADWAY:	\$271,958.84

## 03 - DRAINAGE

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0070	550-1180	700.000	LF	\$31.05530	STM DR PIPE 18",H 1-10	\$21,738.71
0075	550-1240	150.000	LF	\$39.89575	STM DR PIPE 24",H 1-10	\$5,984.36
0800	550-4218	2.000	EA	\$401.54889	FLARED END SECT 18 IN, ST DR	\$803.10
0085	550-4224	1.000	EA	\$553.92774	FLARED END SECT 24 IN, ST DR	\$553.93
0090	668-1100	9.000	EA	\$1,987.17560	CATCH BASIN, GP 1	\$17,884.58
0095	668-1110	10.000	LF	\$175.59481	CATCH BASIN, GP 1, ADDL DEPTH	\$1,755.95
0100	668-5000	10.000	EA	\$1,613.98333	JUNCTION BOX	\$16,139.83
					SUBTOTAL FOR DRAINAGE:	\$64,860.46

## **DETAILED COST ESTIMATE**



## Job: 0013194CONCEPT

## 04 - EROSION CONTROL

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0160	163-0232	1.000	AC	\$371.18049	TEMPORARY GRASSING	\$371.18
0165	163-0240	10.000	TN	\$305.41700	MULCH	\$3,054.17
0195	163-0300	2.000	EA	\$888.68205	CONSTRUCTION EXIT	\$1,777.36
0200	163-0503	2.000	EA	\$300.69333	CONSTR AND REMOVE SILT CONTROL GATE, TP 3	\$601.39
0190	163-0528	200.000	LF	\$3.54141	CONSTR AND REM FAB CK DAM -TP C SLT FN	\$708.28
0205	165-0010	1000.000	LF	\$0.65999	MAINT OF TEMP SILT FENCE, TP A	\$659.99
0155	700-6910	1.000	AC	\$734.14444	PERMANENT GRASSING	\$734.14
0185	700-7000	1.000	TN	\$74.89641	AGRICULTURAL LIME	\$74.90
0170	700-8000	1.000	TN	\$429.39127	FERTILIZER MIXED GRADE	\$429.39
0180	700-8100	100.000	LB	\$1.77481	FERTILIZER NITROGEN CONTENT	\$177.48
0175	700-9300	10000.000	SY	\$3.50648	SOD	\$35,064.80
					SUBTOTAL FOR EROSION CONTROL:	\$43,653.08

## 05 - SIGN MARKING/SIGNAL

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0105	647-1000	1.000	LS	\$190,000.00000	TRAF SIGNAL INSTALLATION NO - 1	\$190,000.00
0110	653-0120	18.000	EA	\$70.23488	THERM PVMT MARK, ARROW, TP 2	\$1,264.23
0115	653-0130	4.000	EA	\$91.46128	THERM PVMT MARK, ARROW, TP 3	\$365.85
0120	653-1501	2000.000	LF	\$0.46096	THERMO SOLID TRAF ST 5 IN, WHI	\$921.92
0125	653-1502	4000.000	LF	\$0.41184	THERMO SOLID TRAF ST, 5 IN YEL	\$1,647.36
0130	653-1704	200.000	LF	\$3.53030	THERM SOLID TRAF STRIPE,24",WH	\$706.06
0135	653-1804	2000.000	LF	\$1.76733	THERM SOLID TRAF STRIPE, 8",WH	\$3,534.66
0140	653-3501	2600.000	GLF	\$0.26533	THERMO SKIP TRAF ST, 5 IN, WHI	\$689.86
0145	653-6006	500.000	SY	\$2.86970	THERM TRAF STRIPING, YELLOW	\$1,434.85
					SUBTOTAL FOR SIGN MARKING/SIGNAL:	\$200,564.79

## 06 - LIGHTING

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0150	681-3600	17.000	EA	\$10,000.00000	LIGHTING STD, SPCL DES	\$170,000.00
					SUBTOTAL FOR LIGHTING:	\$170,000.00

### **TOTALS FOR JOB 0013194CONCEPT**

ITEMS COST:	\$911,037.17
COST GROUP COST:	\$0.00
ESTIMATED COST:	\$910,361.71
CONTINGENCY PERCENT:	0.20
ENGINEERING AND INSPECTION:	0.00
ESTIMATED COST WITH CONTINGENCY AND E&I:	\$1,092,434.05

# GEORGIA DEPARTMENT OF TRANSPORTATION LOCAL ACQUISITION - DETAILED ROW COST ESTIMATE SUMMARY

Revised: County: Fulton Pl: 0013194  Description: Parcels: 9 R/W Plan Date: FOR FUNDING ONLY  CONTRACT  Land and Improvements \$886,152.76  Relocation \$0.00  Demolition \$0.00  SUB TOTAL (Reimbursable) \$886,152.76  Valuation Services (Non-reimbursable) \$15,000.00  Legal Services (Non-reimbursable) \$96,075.00  IN-HOUSE  Sponsor In-house \$0.00  Agency Oversight In-house \$0.00  TOTAL ESTIMATED COSTS (ROUNDED) \$990,000.00	ilenridge Dr
Description: Parcels: 9 R/W Plan Date: FOR FUNDING ONLY  CONTRACT  Land and Improvements \$886,152.76  Relocation \$0.00  Demolition \$0.00  SUB TOTAL (Reimbursable) \$886,152.76  Valuation Services (Non-reimbursable) \$15,000.00  Legal Services (Non-reimbursable) \$81,075.00  SUB TOTAL (Non-reimbursable) \$96,075.00  IN-HOUSE  Sponsor In-house \$0.00  Agency Oversight In-house \$0.00  TOTAL ESTIMATED COSTS \$982,227.76	
Parcels: 9 R/W Plan Date:  CONTRACT  Land and Improvements \$886,152.76  Relocation \$0.00  Demolition \$0.00  SUB TOTAL (Reimbursable) \$886,152.76  Valuation Services (Non-reimbursable) \$15,000.00  Legal Services (Non-reimbursable) \$96,075.00  SUB TOTAL (Non-reimbursable) \$96,075.00  IN-HOUSE \$ponsor In-house \$0.00  Agency Oversight In-house \$0.00  TOTAL ESTIMATED COSTS \$982,227.76	
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CONTRACT       \$886,152.76         Relocation       \$0.00         Demolition       \$0.00         SUB TOTAL (Reimbursable)       \$886,152.76         Valuation Services (Non-reimbursable)       \$15,000.00         Legal Services (Non-reimbursable)       \$81,075.00         SUB TOTAL (Non-reimbursable)       \$96,075.00         IN-HOUSE       \$0.00         Agency Oversight In-house       \$0.00         TOTAL ESTIMATED COSTS       \$982,227.76	
Land and Improvements \$886,152.76  Relocation \$0.00  Demolition \$0.00  SUB TOTAL (Reimbursable) \$886,152.76  Valuation Services (Non-reimbursable) \$15,000.00  Legal Services (Non-reimbursable) \$81,075.00  SUB TOTAL (Non-reimbursable) \$96,075.00  IN-HOUSE \$0.00  Agency Oversight In-house \$0.00  TOTAL ESTIMATED COSTS \$982,227.76	.LY
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TOTAL ESTIMATED COSTS (ROUNDED) \$990,000.00	
TOTAL ESTIMATED COSTS (ROUNDED) \$990,000.00	
Preparation Credits Hours Signature	
	<b>—</b>
*CG#: (DATE)	
*CG#: (DATE)	

\*CG required only if used for Negotiations

Attachment(s): Project Location Map; Subject/Comp Location Map; Comparable Sales Data

## **Preliminary Utility Cost Estimate**

Date: 8/11/2015

Project: Roswell Rd. @ Glenridge Dr.

Project No. N/A

P.I. Number: 0013194

**Project Termini:** Intersection Improvement

**Project Description:** The project will realign Glenridge Drive so that it will line up with a nearby condominium complex's driveway. It will convert two closely spaces 3-legged intersections into a single four-legged intersection. This project will provide a more appropriate intersection angle as well as adequate left-turn lanes in the northbound and southbound directions. It will construct new sidewalks on both sides of the roadways along most of the project length.

Facility Owner	Reimbursable
Fulton County Public Works (Sewer)	\$ 0,000
AT&T	\$ 0,000
Georgia Power	\$120,000
Atlanta Gas Light	\$ 0,000
Comcast	\$ 0,000
Atlanta Waterworks	\$ 65,000

The Total reimbursable Utility Cost Estimate (Concept) = \$185,000

# Department of Transportation State of Georgia

## INTERDEPARTMENT CORRESPONDENCE

FILE Fulton County OFFICE Planning

P.I. # 0013194

**DATE** May 11, 2015

**FROM** Cynthia L. VanDyke, State Transportation Planning Administrator

TO Albert Shelby, State Program Delivery Engineer

Attention: Sam Samu, P.E.

SUBJECT Review Design Traffic for SR 9/US 19/Roswell Road @ CS 351/Glenridge

Drive.

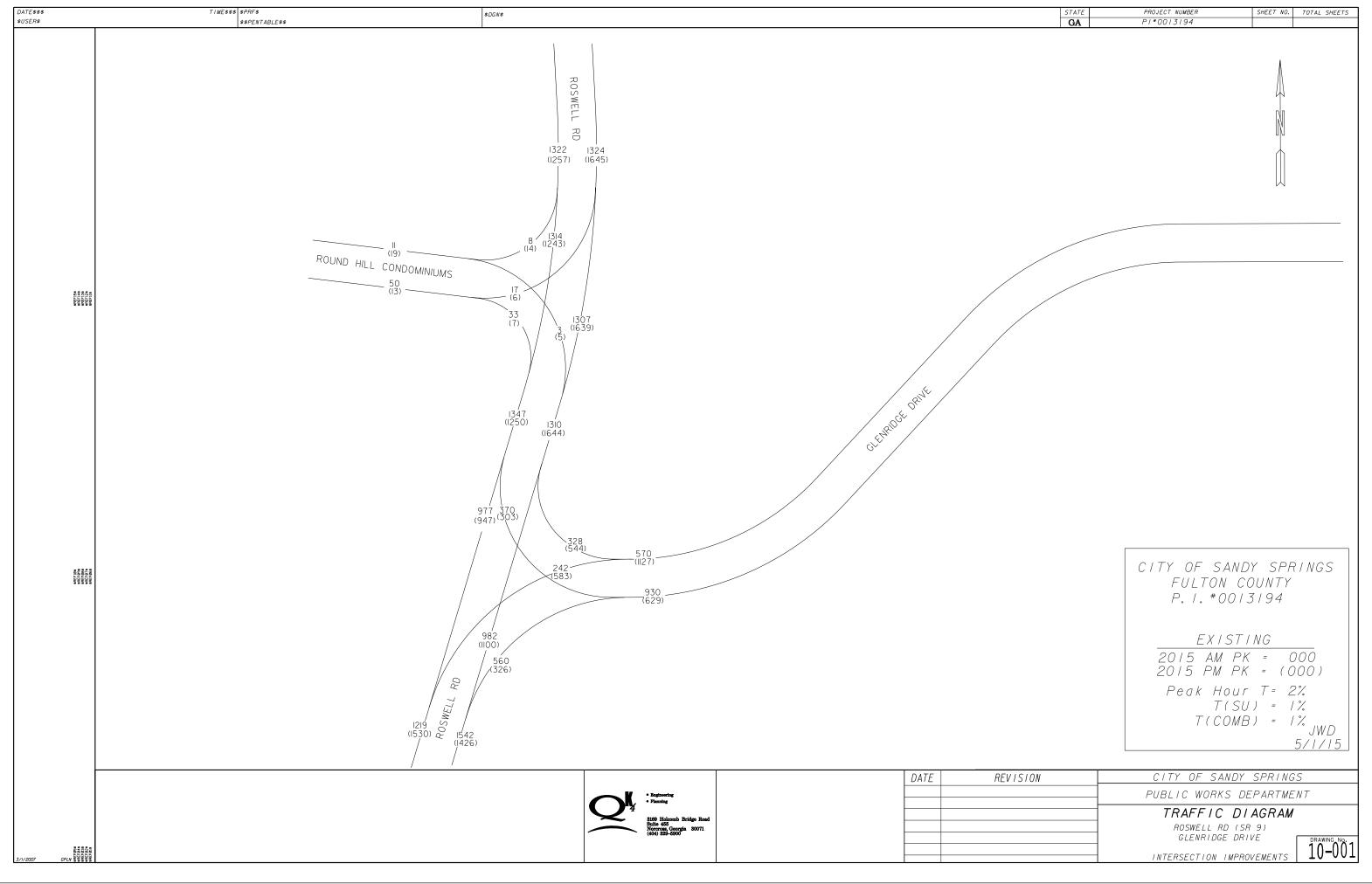
We reviewed Design Traffic for the above project. The Design Traffic is

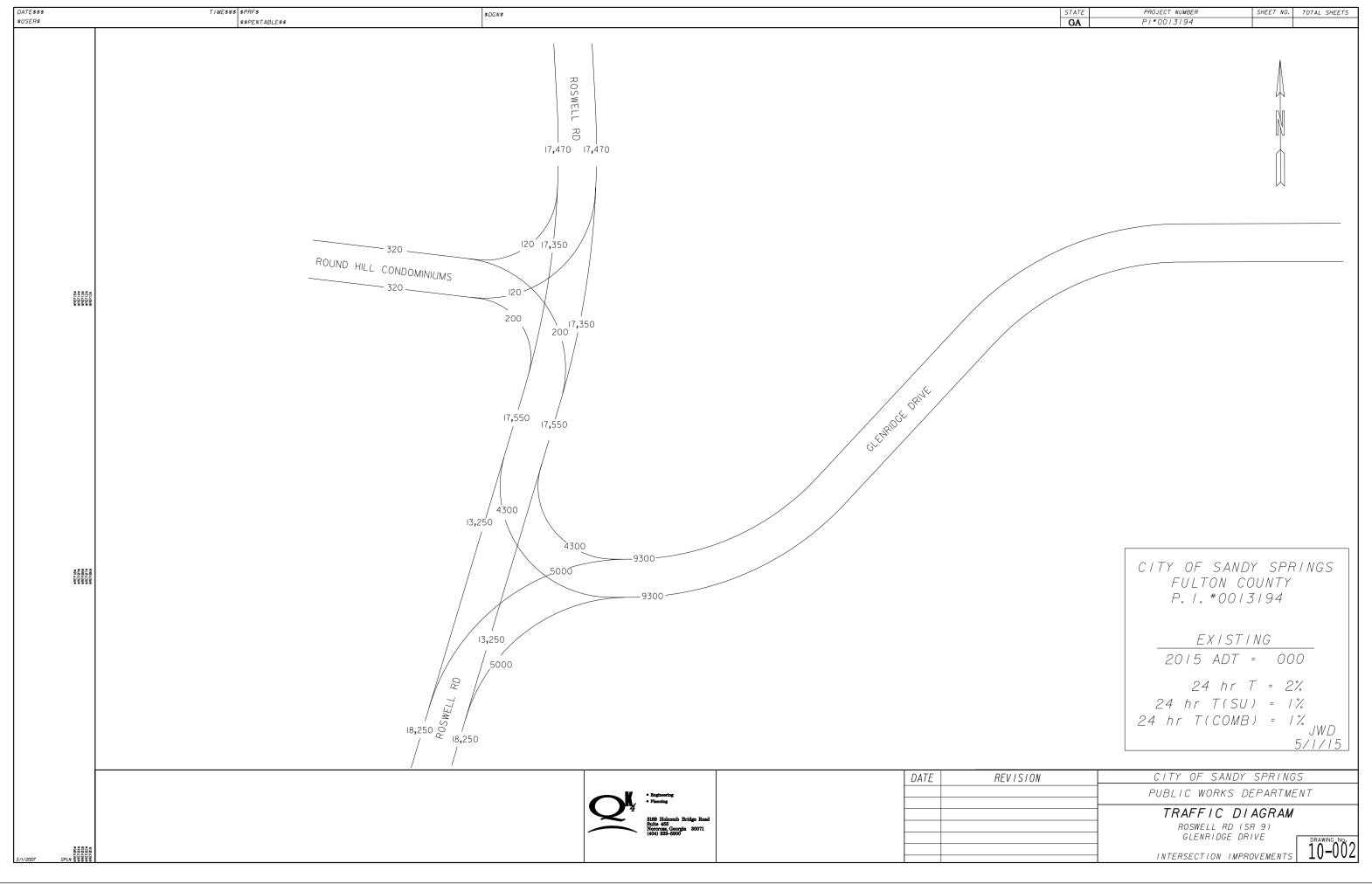
approved based on the information furnished.

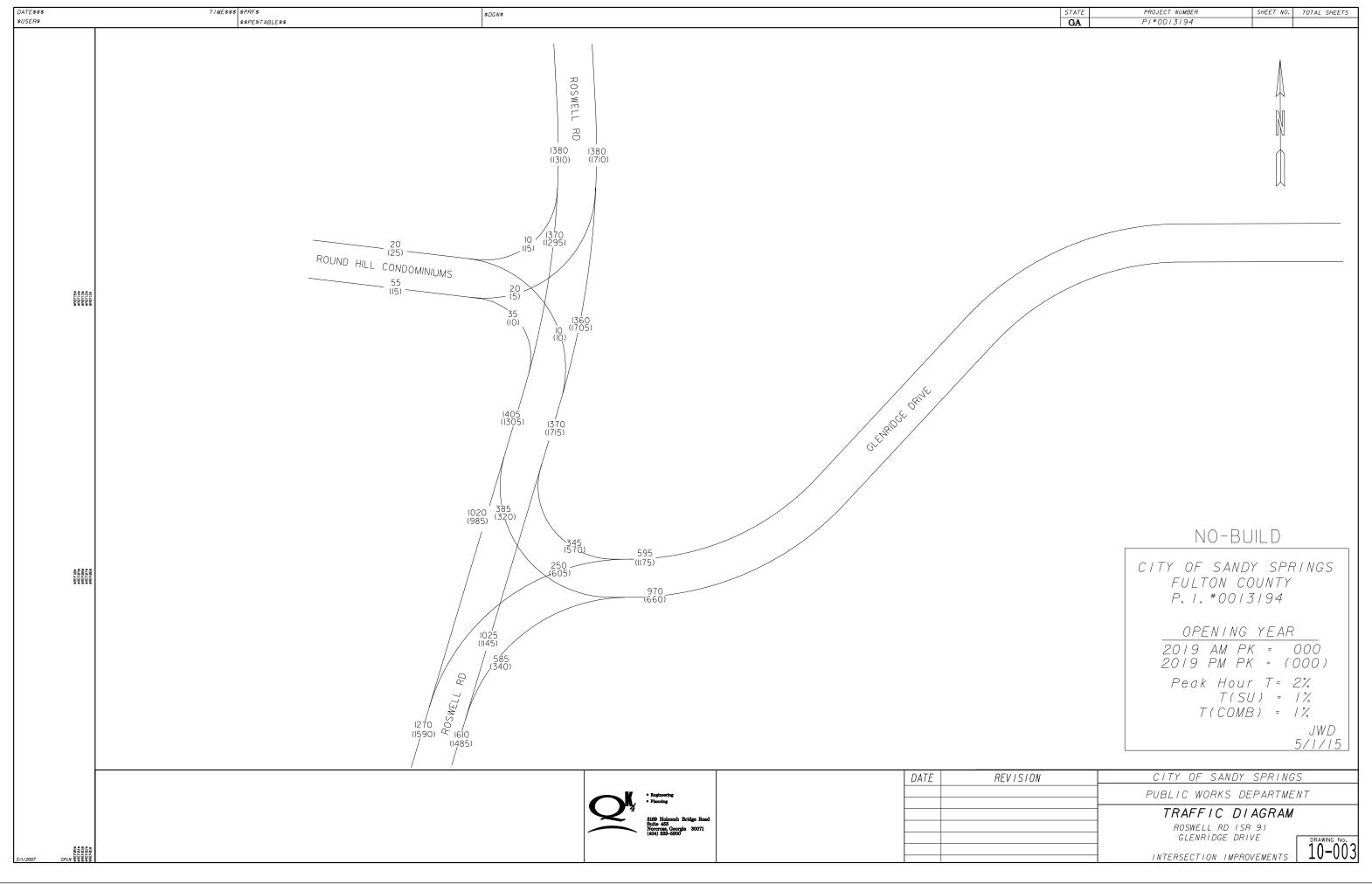
If you have any questions concerning this information please contact

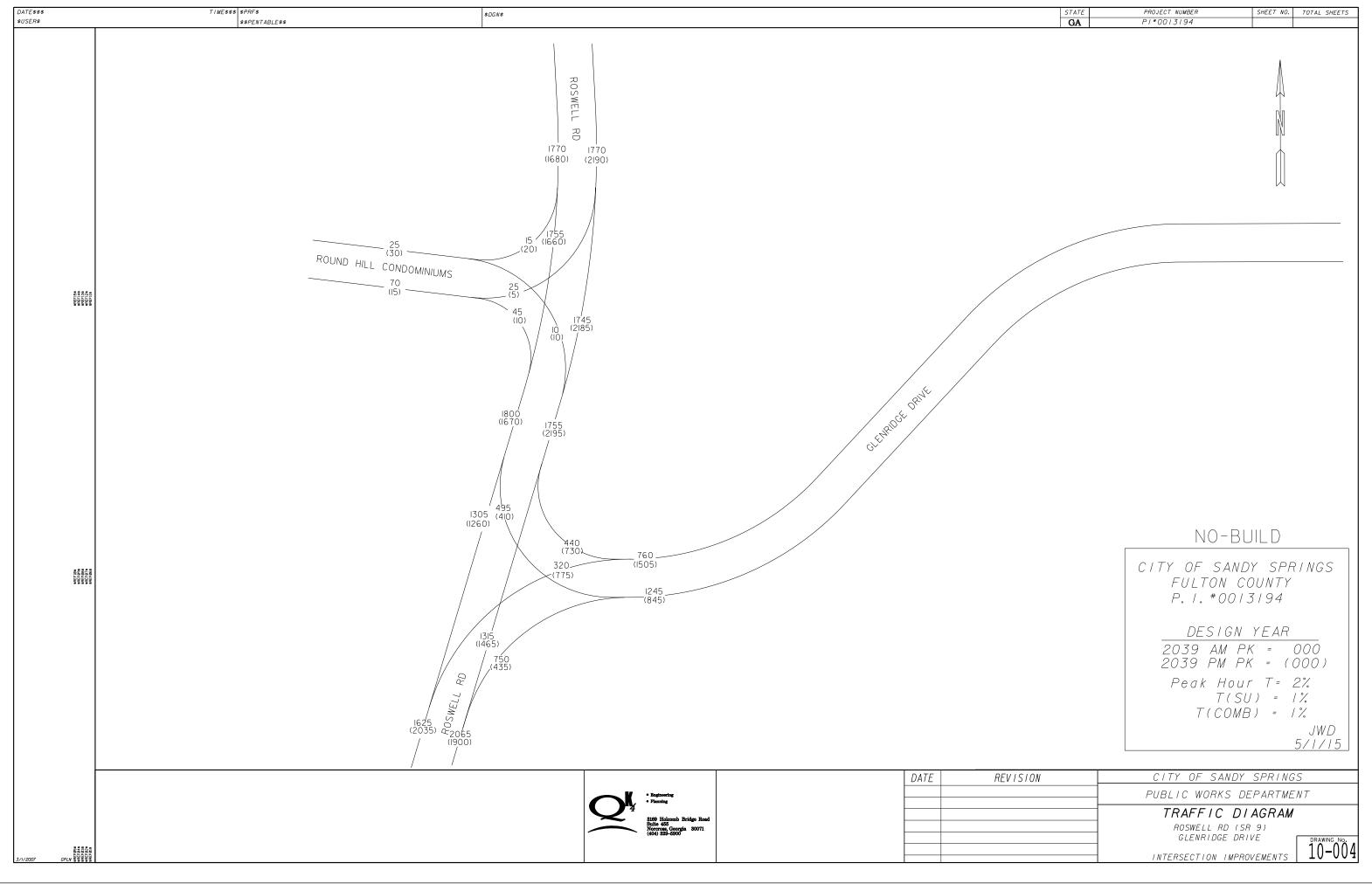
Abby Ebodaghe at (404) 631-1923.

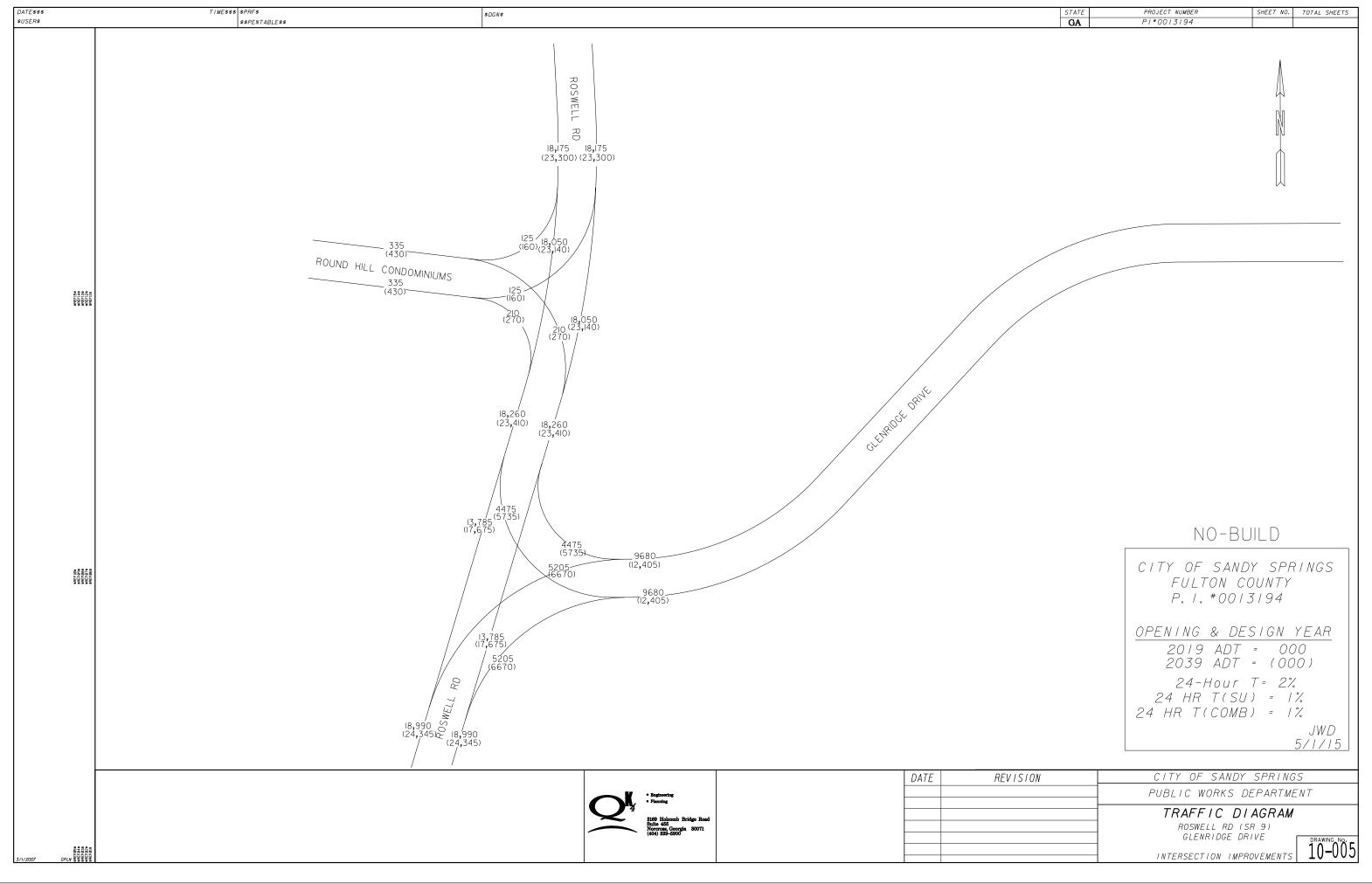
CLV/AFE

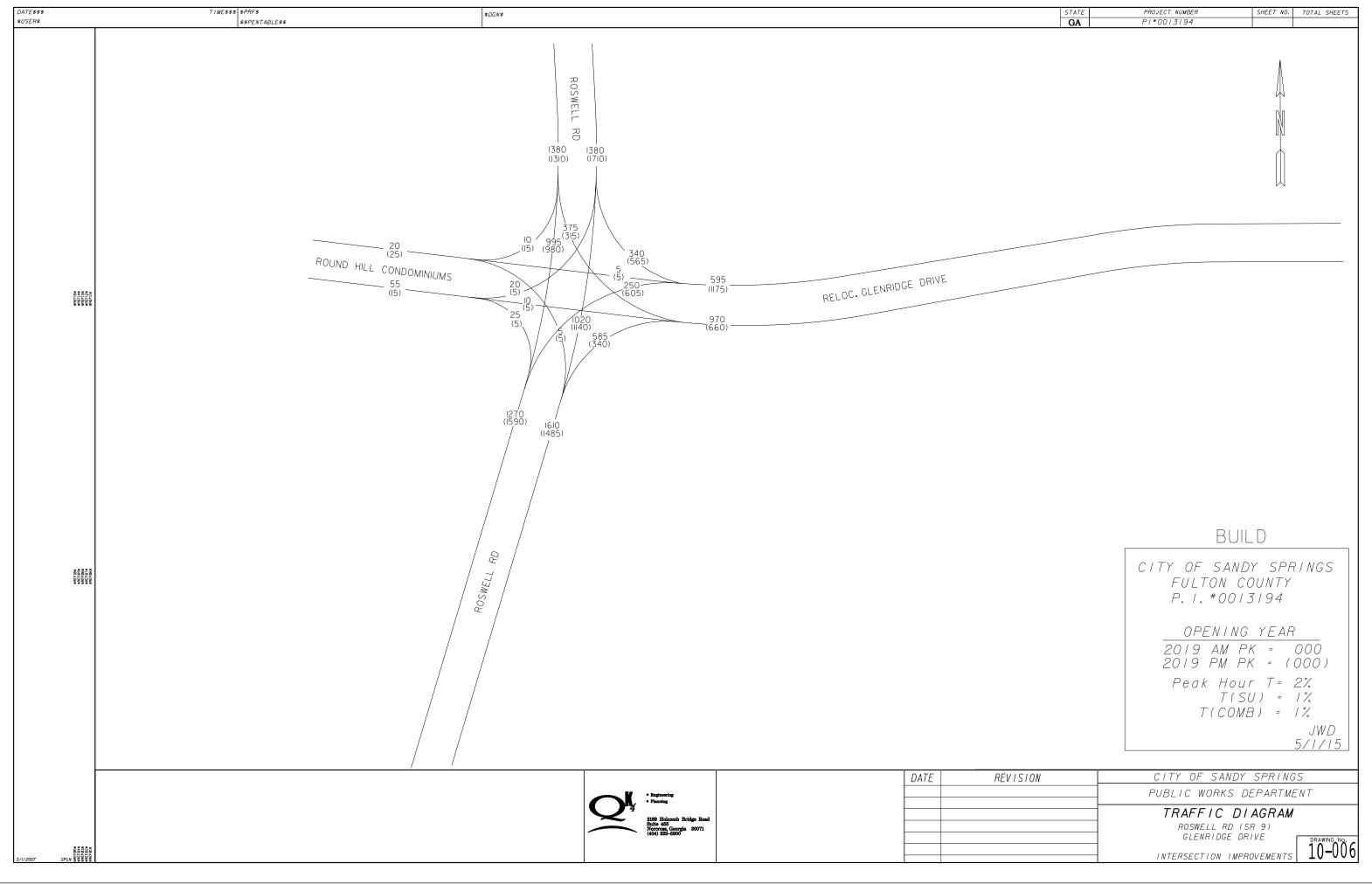


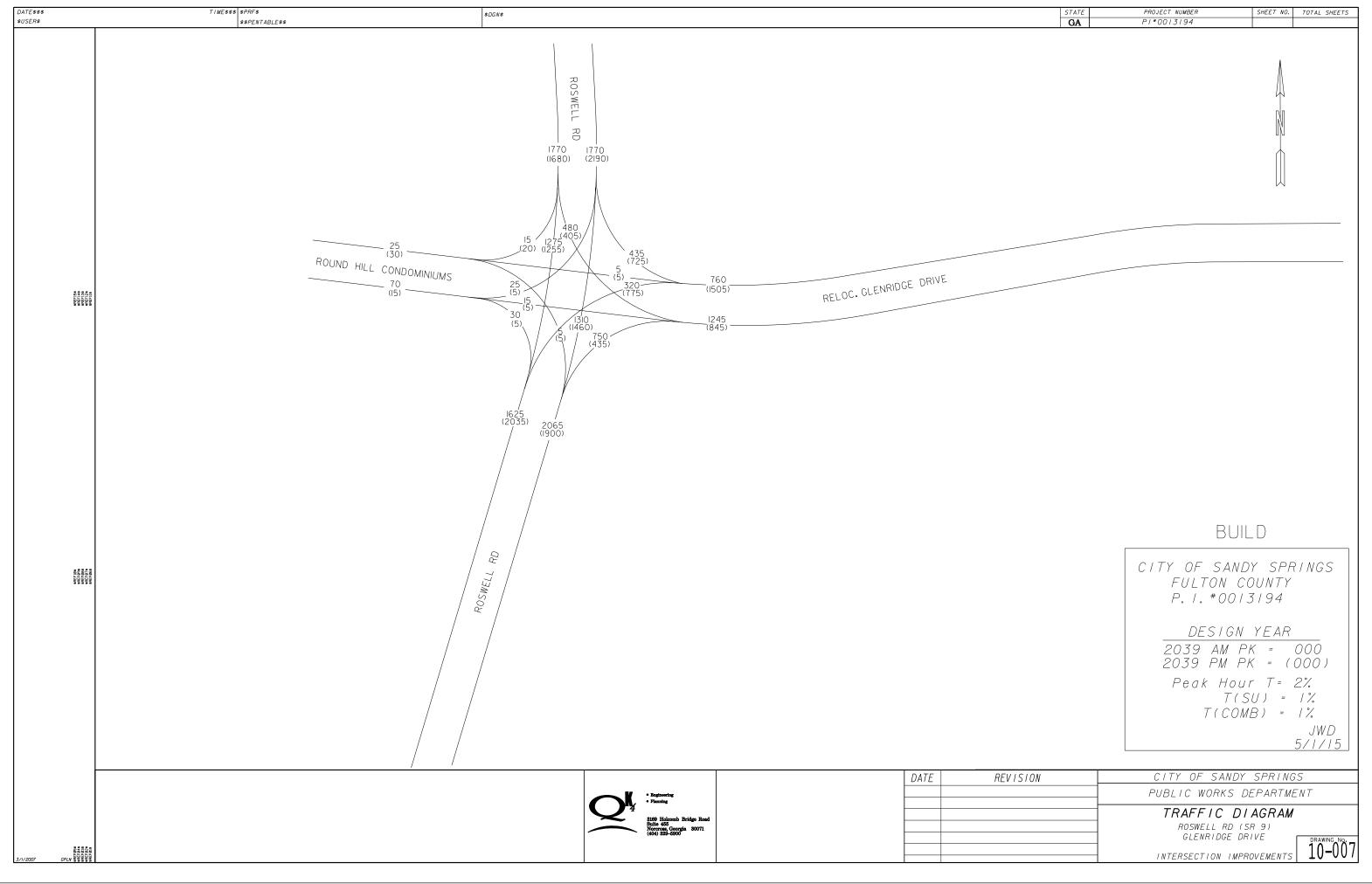


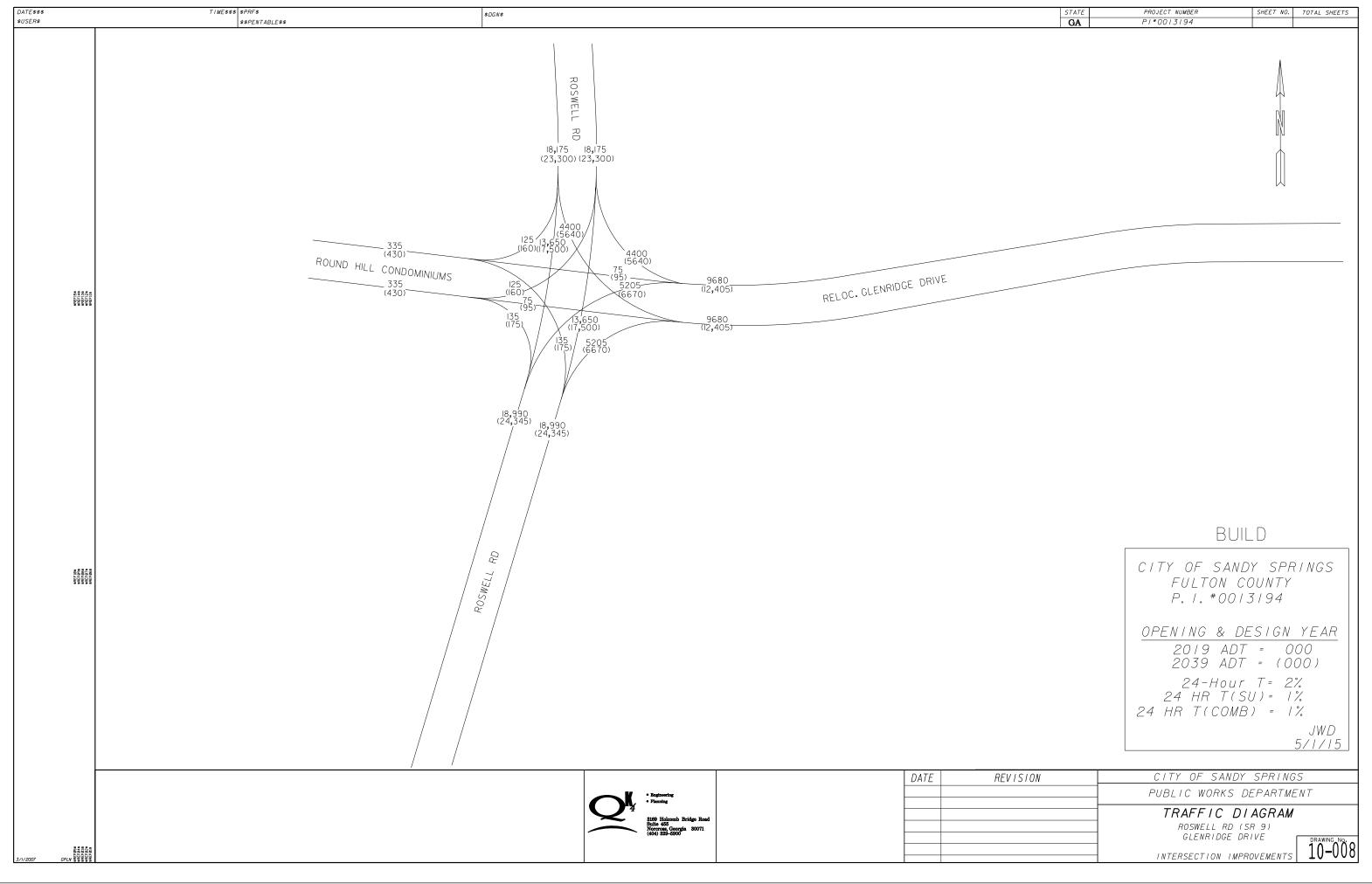














## **MEMORANDUM**

TO: Marty Martin, Capital Improvement Program Unit Manager – City of Sandy Springs

FROM: Jeffrey W. Dyer, P.E. PTOE

SUBJECT: Updated Build and Design Year Traffic Estimates

**DATE**: 5/1/15

PROJECT: PI#0013194 - Roswell Road @ Glenridge Drive Intersection Improvement

This project will realign Glenridge Drive so that it will line up with a nearby condominium complex's driveway. It will convert two closely spaced 3-legged intersections into a single four-legged intersection. This project will provide a more appropriate intersection angle as well as adequate left turn lanes in the northbound and southbound directions. Additionally, this improvement has the advantage of retaining full access for the Round Hill condominiums. The construction of this project has the potential to reduce the number of serious crashes at this intersection.

## **Build and Design Year Peak hour Traffic Projections**

As a basis for traffic projections, All Traffic Data was hired to record both peak hour turning movement and directional counts at key locations in the vicinity of the project. These counts were completed during March of 2015. The 24-hour directional count locations are listed in Table 1. Some of the locations measured vehicle classifications as well as 24-hour directional counts. The vehicular classification counts were used as a basis for determining the future truck percentages.

**Table 1: 24-hour Directional Count Locations** 

Location	Type of Count
Roswell Road @ Glenridge Drive	AM/PM Peak TM Count*
Roswell Road @ Round Hill Condo driveway	AM/PM Peak TM Count**
Roswell Road north of intersection	24-Traffic Count
Roswell Road south of intersection	24-Traffic Count
Glenridge Drive east of intersection	24-Traffic Count

<sup>\*</sup> Includes separate count for trucks

<sup>\*\*</sup> Due to proximity to Glenridge Drive intersection, through traffic on Roswell Road not included.



## **MEMORANDUM**

Based on the project schedule, the assumed opening year for this project is 2019. In order to arrive at projected traffic volumes for the "opening" year, four years of compounded traffic growth have been added to the 2015 turning movement volumes. This background growth includes traffic generated reflected by normal population growth and normal increases in through traffic that passes through this intersection. There are no known developments in the immediate vicinity of the project area, Developments of Regional Impact (DRI's) or otherwise, that would contribute additional traffic to the project area.

#### HISTORICAL TRAFFIC GROWTH

A list of non-interstate traffic counts in the vicinity of this intersection has been compiled. These provide one basis for estimating an annual growth rate. The years 2008 through 2013 were examined. The year 2009 has been excluded from Table 2 because most of the count locations did not have traffic counts recorded that year.

The overall combined average traffic growth for the period between 2008 and 2013 is an increase of 7.94%, which translates into an average annual compounded traffic growth of 1.54 % per year. Within Table 2, some volumes have actually declined year to year, and there are many outliers to the 1.54% average annual growth derived from that table.

Table 2: Historical Traffic Growth: 2008-2012

D.O.T. Count	Predom. Roadway	Roadway Name, Location	Hi	istorical	A.A.D.T.	Volume	es
Station	Direction		2013	2012	2011	2010	2008*
1215116	N-S	Roswell Road	33,630	33,530	44,130	43,710	33,270
1210225	E-W	Glenridge Drive	19,190	16,940	17,030	17,050	15,790
1216034	N-S	High Point Road	4,020	3,620	3,630	3,680	4,120
1216032	E-W	Northland Drive	3,100	3,030	2,380	2,420	2,500
1215114	N-S	Roswell Road	31,480	30,200	29,340	28,610	28,430
1210656	N-S	Johnson Ferry Road	23,400	23,290	23,420	18,690	22,260
ANNUAL VOLUME TOTALS			114,820	110,610	119,930	114,160	106,370

<sup>\*2009</sup> volumes skipped due to a number of count stations that did not record volumes that year.

Based on the variability of traffic trends in the traffic counts, other sources of recent traffic growth trends were examined. One potential basis of estimating traffic growth is to compare nearby census tracts between the years 2000 and 2010. There are four census tracts located in the vicinity on the project. These include census tracts 10114, 10113, 10212, and 10211. Table 3 (next page) shows the 2010 population per census tract, followed by the



## **MEMORANDUM**

10-year population growth from the previous census for each tract. The 10-year population change varies from a 3.8% decline to a 26.3% increase.

Table 3: Census Tract Summary: 2000-2010

Census Tract	Location	2010 Population	% Population Change 2000- 2010
10113	NE of Intersection	5,439	+26.3 %
10114	SE of Intersection	6,115	+6.2 %
10211	SW of Intersection	3,970	+24.1 %
10212	W of Intersection	5,440	-3.8 %
10-year	Weighted Average	Increase	+12.22 %

The weighted average of the population change for all four census tracts for the 10-year period is an increase of 12.22%. That 10-year increase translates into 10 consecutive compounded single-year population increases of 1.16%.

Finally, the Atlanta Regional Commission (ARC) peak hour and daily volume projections were compared between 2015 and 2020 in the vicinity of the intersection (Table 4). Translating the overall 5-year increases for AM peak, PM peak and daily traffic into annual percentage increases approximates 1% annual growth, especially for the AM peak hour and daily traffic.

Table 4: ARC Traffic Projection Summary: 2015-2020 - All Intersection Approaches

Year	AM Peak	PM Peak	Daily
2015	16,395	24,487	70,103
2020	18,193	26,235	77,662
5-Year Volume Increase	1,798	1,748	7,559
5- Year % Increase	10.97%	7.14%	10.78%
Annual % Increase	1.05%	0.69%	1.03%



Based on examination of previous traffic and population growth as well as ARC volume projections for the upcoming five-year period, the annual traffic growth rate between the current year of 2015 and the opening year of 2019 is assumed to be 1.0%, which approximates the overall traffic increase over the previous six years, and the expected increase in traffic up to 2020. This compounded growth rate results in overall traffic growth of 4.06% between 2015 and 2019.

To use as a basis for expected traffic growth between 2020 and 2040, the ARC peak hour and daily volume projections were reviewed for those years as well as the year 2030. Note that the opening year and design year volume projections have been developed independently from the ARC model. The ARC volume projections are used for the purposes of comparison and of reflecting expected trends of growth, employment and commuting patterns in the immediate vicinity of this project, not for determining the actual traffic volumes.

Table 5 summarizes traffic increases predicted by the ARC model in the vicinity of Roswell Road @ Glenridge Drive. As can be seen in the table, the annual traffic growth approaches 1.5% during the 2020-2030 time period, then leveling off to almost exactly 1% annually for the 2030-2040 time period.

Table 5: ARC Traffic Projection Summary: 2020-2040 – All Intersection Approaches

Year	AM Peak	PM Peak	Daily	
2020	2020 18,193		77,662	
2030	20,964	30,009	89,971	
2040	23,082	33,116	98,973	
10- Year % Increase (2020-2030)	15.23%	14.39%	15.89%	
Annual % Increase (2020-2030)	1.43%	1.35%	1.48%	
10- Year % Increase (2030-2040)	10.10%	10.35%	10.01%	
Annual % Increase (2030-2040)	0.97%	0.99%	0.96%	



Construction

Using the traffic growth predictions from ARC model shown in Table 5 as a basis, the initial 10-year annual growth percentage between 2019 and 2029 will be assumed to be 1.5%. For the final 10 year period, the annual growth percentage will be assumed to be 1.0%. This is consistent with the condition that as an area becomes more fully developed, the rate of growth tends to level off over time. The overall project area is already heavily developed with little available land for further growth, making high rates of traffic growth based on nearby land uses unlikely in this area.

For the purpose of this project, 2019 opening year traffic volumes have been increased by 28.19% to account for 2039 (design year) traffic projections. As discussed in the previous paragraph, this assumes that growth in the area continues, resulting in a 1.5% compounded annual increase for the first ten years, and 1.0% compounded annual growth for the final ten years.

### **Estimated Truck Percentages**

Due to the existing congestion and queuing within the immediate project area, it is difficult to find suitable locations to record accurate vehicular classification traffic counts over a 24-hour period. In order to obtain an estimate of trucks, at least during the peak periods, the number of trucks versus the number of overall vehicles was manually counted on each approach at Roswell Road @ Glenridge Drive. Table 6 (next page) summarizes the results.

The peak periods included in Table 6 are the entire two-hour periods that were counted both in the morning (7:00 AM to 9:00 PM) and in the afternoon (4:00 PM to 6:00 PM), that were used to determine each peak hour. The overall average truck percentage for each approach for the four hours that were counted are slightly higher than 2%, with the exception of the Roswell Road north approach, which was slightly higher, due to a higher AM peak period truck count.

For the purposes of this project, the truck percentage (T) is assumed to be 2% for both Roswell Road and Glenridge Drive. Due to the urban environment, primarily residential and office land uses, and heavy congestion within the project vicinity, it is not likely that the truck percentage on these roadways would be very high in any case. Examination of nearby GDOT traffic count history (count stations included in Table 2) showed an almost universal truck percentage of 2% for every count station. The 24-hour truck percentage is assumed to be the same as the peak hour truck percentage.

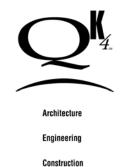


Table 6: Roswell Road @ Glenridge Drive - Truck Percentage Summary

Time Period	Roswell Rd N	Roswell Rd S	Glenridge Dr E
AM Peak Total 2-Way Volume	4903	4954	2733
AM Peak 2-Way Truck Volume	161	134	69
AM Peak Truck Percentage (T)	3.28	2.70	2.52
PM Peak Total 2-Way Volume	5541	5582	3455
PM Peak 2-Way Truck Volume	100	82	60
PM Peak Truck Percentage (T)	1.80	1.47	1.74
Total Truck Percentage (T)	2.50	2.05	2.08

#### **Estimated K-Factor**

The existing K-factor was computed at three locations where 24-hour directional counts were recorded. These are the approaches to the existing intersection of Roswell Road @ Glenridge Drive. The PM peak hour at this intersection was found to be slightly higher than the AM peak hour on the day it was counted, although both peak periods have similar total volumes. The PM peak hour is the period between 4:30 PM and 5:30 PM. The computed K-values are listed in Table 7.

**Table 7: Computed K-Factors** 

Location	Computed K-Value
Roswell Road north of Glenridge Drive	8.3 %
Roswell Road south of Glenridge Drive	8.4 %
Glenridge Drive east of Roswell Road	9.7 %



Table 7 shows the measured K-factors lie between 8% and 9% along Roswell Road, and between 9% and 10% along Glenridge Drive. For the purposes of this project, the K-factor is assumed to be 9% for all sections of roadway.

#### **Build and No-Build Traffic**

This project is limited in scope. It consists of the realignment of a single intersection leg in order to improve its safety and efficiency. There is no new through capacity added to any of the intersection legs, nor is construction of this project expected to cause significant changes to traffic patterns in the vicinity of this project that would increase the volume of traffic using this intersection once construction is completed.

For the reasons discussed above, the "Build" Traffic is assumed to be the same as the "No-Build" traffic for both the opening and design years, with only the intersection configuration differing.

#### **List of Attachments**

Location Map

**Project Display** 

Existing (2015) Peak Hour Traffic Volumes

Existing (2015) Daily Traffic Volumes

Opening Year (2019) Peak Hour Traffic Volumes - No-Build

Design Year (2039) Peak Hour Traffic Volumes - No-Build

Opening Year (2019) and Design Year (2039) Daily Traffic Volumes - No-Build

Opening Year (2019) Peak Hour Traffic Volumes -Build

Design Year (2039) Peak Hour Traffic Volumes -Build

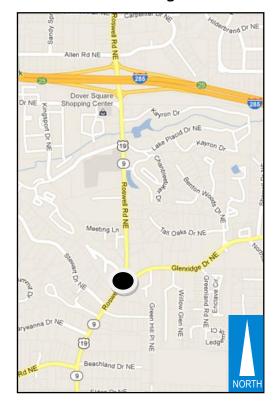
Opening Year (2019) and Design Year (2039) Daily Traffic Volumes -Build

Raw Traffic Counts - Recorded by All Traffic Data Service, Inc. on 3/3/15

# DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

# PRELIMINARY Traffic Engineering Study

For the intersection of:
State Route 9 and Glenridge Drive
In the City of Sandy Springs,
County of Fulton.
At Mile log: 9.62



Report prepared by: City of Sandy Springs 7840 Roswell Road, Bldg. 500 Sandy Springs, GA. 30350 770-730-5600

May 21, 2012

#### PURPOSE FOR INVESTIGATION

As a result of safety concerns and traffic operational issues at the intersection of State Route (SR) 9 and Glenridge Drive, this Traffic Engineering study was initiated to evaluate existing conditions and identify potential operational and safety measures.

### **EXISTING CONDITIONS**

# **Facility Description**

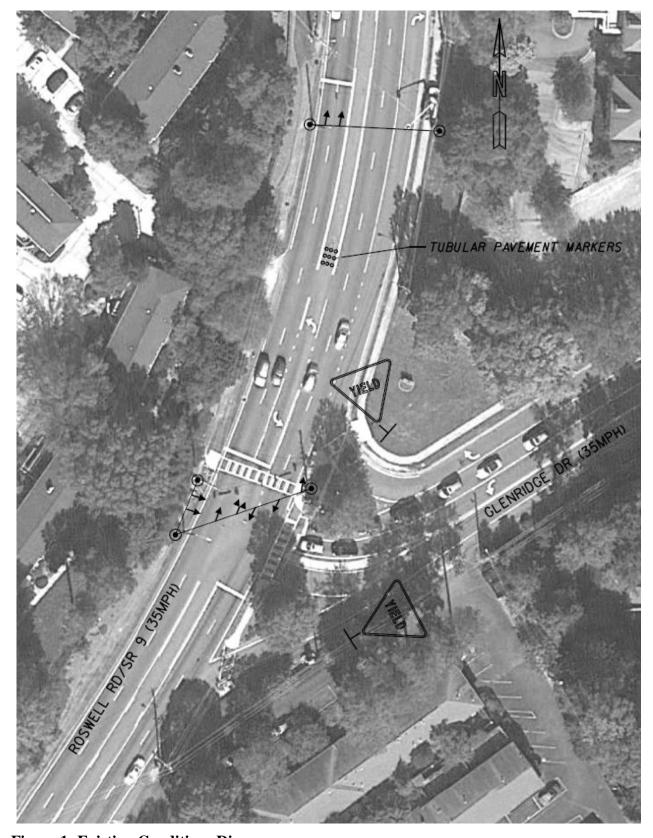
The intersection of SR 9 and Glenridge Drive is a signalized 3-leg intersection located in the City of Sandy Springs, Georgia. According to the Georgia Department of Transportation (GDOT) Road Classification (RC) database, the functional classification of SR 9 is Urban Arterial Street and Glenridge Drive is classified as Minor Urban Arterial Street. The intersection has an undesirable skew angle. Additionally, there is a condominiums driveway approximately 160 feet north of the intersection on the west side of SR 9, resulting in back-to-back left turn lanes on SR 9 that are a combined 110 feet in length. The existing conditions diagram of the intersection is shown in Figure 1.

SR 9 is a five-lane roadway section running north-south. It is a heavily travelled major arterial which connects the City of Atlanta to the City of Sandy Springs and has interchange access to I-285. SR 9 has 10-foot wide lanes, curb and gutter, and a posted speed limit of 35 miles per hour (mph). At its intersection with Glenridge Drive, SR 9 has two through lanes and one left turn lane in the southbound direction; and two through lanes in the northbound direction.

*Glenridge Drive* is an urban roadway section with a varying cross section that runs east-west. It has 11-foot wide lanes, curb and gutter, and a posted speed limit of 35 mph. At its intersection with SR 9, Glenridge Drive has two left turn lanes and a single right turn lane.

# **Traffic Control**

The intersection of SR 9 and Glenridge Drive is controlled by a traffic signal. This traffic signal is part of a coordinated signal system along SR 9. There is a protective/permissive left-turn phase for southbound approach. There are pedestrian phases across the east and north legs of the intersection. The northbound and westbound right-turn movements are channelized and are yield controlled. There is a set of supplemental signal heads for the southbound movement approximately 245 feet north of the intersection.



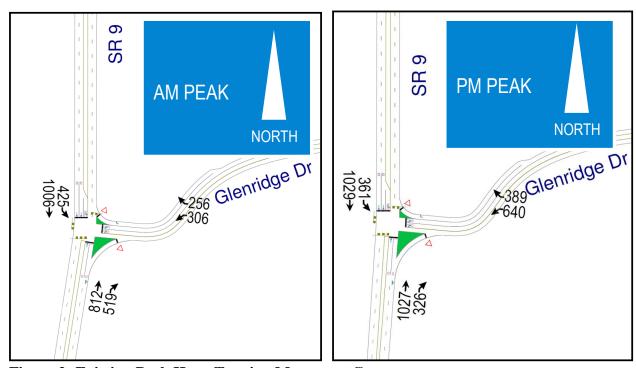
**Figure 1: Existing Conditions Diagram** 

# **Traffic Volumes**

Annual Average Daily Traffic (AADT) volumes for SR 9 were obtained from GDOT's State Traffic and Report Statistics (STARS); these volumes are provided in the following table.

Annual Average Daily Traffic Volumes								
Location	Traffic Counter	2005	2006	2007	2008	2009	2010	
SR 9 south of Glenridge Dr	(TC 5116)	38,400	33,420	34,900	33,280	32,340	43,710	

In addition, AM and PM peak period turning movement counts were collected at the intersection. These counts were conducted on Tuesday, March 20, 2012. The four consecutive 15-minute interval volumes that summed to produce the highest volume at the intersection in the morning and in the evening were then determined. These volumes make up the peak-hour traffic volumes, shown in Figure 2, and were used in the Level of Service (LOS) analysis for existing conditions. The turning movement count sheets are included in the Appendix under Traffic Count Data.



**Figure 2: Existing Peak Hour Turning Movement Counts** 

### **Pedestrian Movement**

Sidewalks and pedestrian ramps are provided along the east side of SR 9, and along the north side of Glenridge Drive. The intersection has two signalized pedestrian crossings; one across the east leg and another across the north leg.

# **Parking**

There is no designated on-street parking along neither SR 9 nor Glenridge Drive in the immediate vicinity of the intersection.

# **Crash History**

Crash data for the intersection of SR 9 and Glenridge Drive for the most recent available three-year period (2009-2011) was obtained from the City of Sandy Springs database. The crash diagrams for these years are shown in Figures 3 through 5.

The crash data is summarized in the following table.

Vehicle Crash History									
		Crash Types							
				Side	Side				
Year	Anala	Head	Rear	Swipe –	Swipe –	NCMV* Tota	Total	Injury	Fatal
1 ear	ear Angle	On	End	Same	Opposite		Total		
				Direction	Direction				
2013**	12	0	12	2	0	2	28	12	0
2012	14	0	20	1	0	2	37	16	0
2011	15	0	16	3	0	1	35	11	0
2010	17	1	11	5	0	2	36	13	0
2009	3	2	13	4	0	1	23	5	0

<sup>\*</sup>NCMV - Not a Collision with a Motor Vehicle

Review of the crash history revealed a high number in angle crashes. A total of 35 angle crashes occurred in the three-year period with 15 of the crashes occurring during the most recent available twelve-month period. The angle crashes appear to be attributed to the inadequate storage for the southbound left turn lane, which influences motorists to misjudge gaps and force the left turn maneuver due to excessive delays for this movement. The majority of the rear end and sideswipe crashes are also directly related to queue spillbacks in both the southbound and northbound directions. Pictures on Page 12 of this report, captured by the City of Sandy Springs CCTV camera at this intersection, depict the safety and operational issues at this intersection.

<sup>\*\*-</sup> Through May

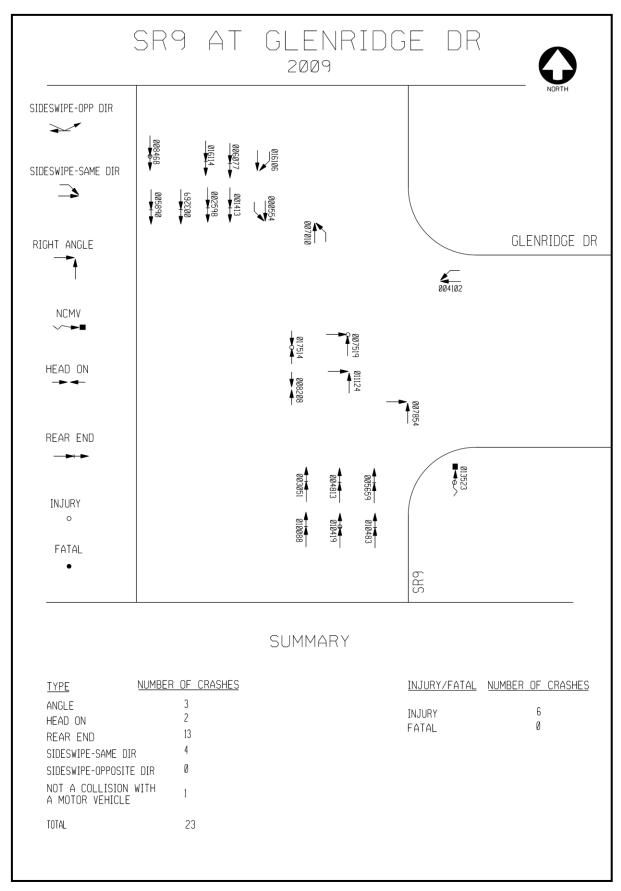


Figure 3: Collision Diagram for 2009

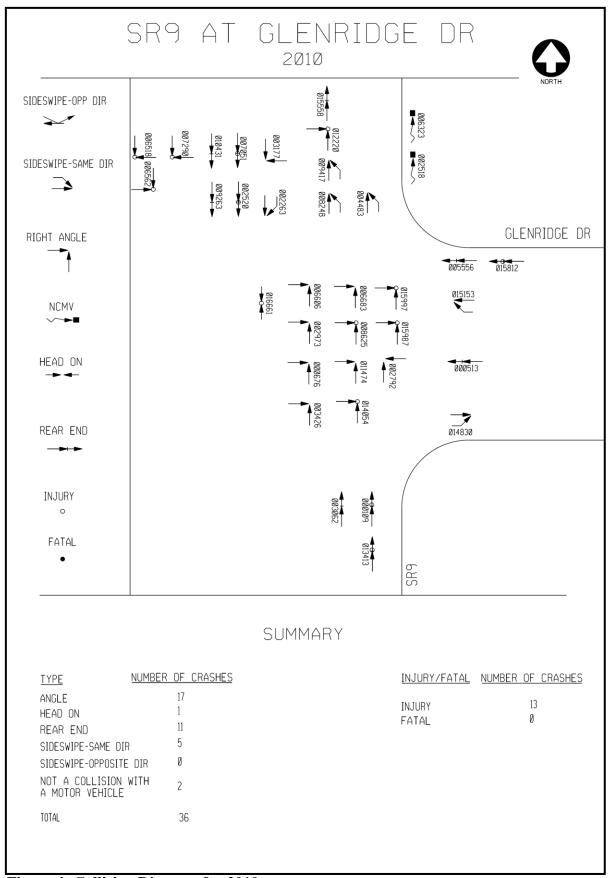


Figure 4: Collision Diagram for 2010

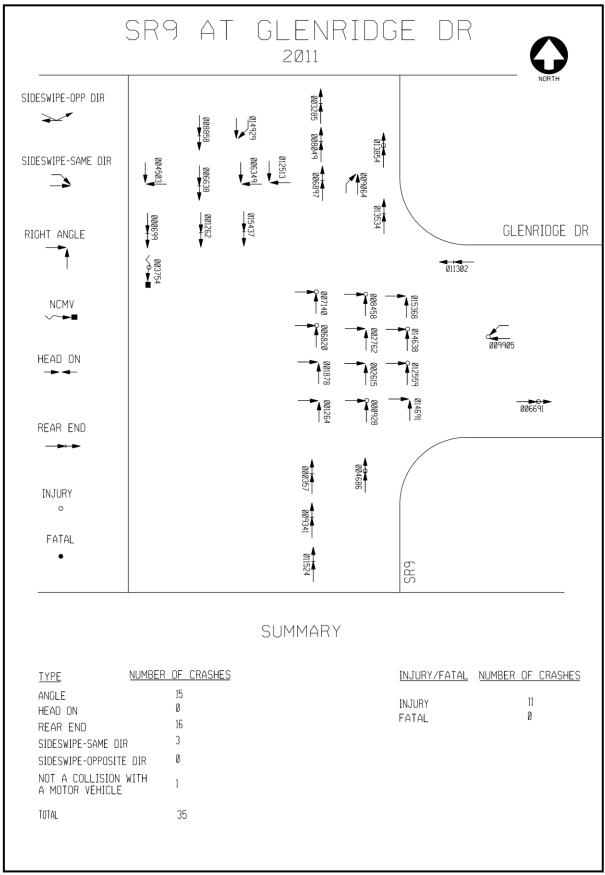


Figure 5: Collision Diagram for 2011

# **Capacity Analysis**

In this study, the methodology used for evaluating traffic operations at the subject intersection is based on criteria set forth in the Transportation Research Board's <u>Highway Capacity Manual</u>, 2010 Edition (HCM 2010). The following is a description of methodology employed for the analysis of the subject intersection.

# **Signalized Intersections:**

For signalized intersections, LOS for a signalized intersection is defined in terms of average control delay per vehicle, which is composed of initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The following table presents LOS criteria for signalized intersections as they are defined by average control delay. LOS A indicates operations with very low control delay, while LOS F describes operations with extremely high average control delay. The following table presents LOS criteria for signalized intersections.

Level of Service Criteria for Signalized Intersections								
Level of Service	Average Control Delay (sec/veh)							
A B C D E F	$\leq 10.0$ > 10.0 and $\leq 20.0$ > 20.0 and $\leq 35.0$ > 35.0 and $\leq 55.0$ > 55.0 and $\leq 80.0$ > 80.0							

Source: 2010 Highway Capacity Manual

This methodology is the basis for Trafficware's Synchro 8.0 traffic analysis software package which was used for the analysis. The intersection was analyzed for the signalized condition using existing volumes and intersection geometry. The intersection operations LOS were determined for the morning and evening peak hours. The HCM signalized reports are provided in the Appendix section Capacity Analysis.

#### **Capacity Analysis Results:**

The following table shows the existing traffic operations at the intersection.

I	ntersection Le	vel of Service and Control Delay (seconds)	
	Approach	Signalized	
	Approach	LOS	Delay
		AM Peak	
SR 9	Northbound	D	43.1
SK 9	Southbound	С	31.2
Glenridge Dr	Westbound	Е	61.5
Overall Intersection		D	41.0
		PM Peak	
SR 9	Northbound	D	40.4
SK 9	Southbound	Е	74.6
Glenridge Dr	Westbound	Е	63.1
Overall Intersection		Е	59.6

The intersection operates at an unacceptable LOS during the PM peak. The heaviest delay is experienced by the southbound movement which is directly attributed to the inadequate southbound left turn storage. During field observations throughout the day, spillback was observed from the southbound left turn lane into the inside southbound through lane, limiting the capacity of the southbound movement into one lane. Additionally, this situation creates high safety concern with vehicles stopped in the in the inside through lane. Furthermore, northbound vehicles attempting to execute a left turn to enter the condominiums is stopped in the northbound inside lane because the southbound left turn queue has blocked the northbound left turn bay. The Pictures on Page 12, captured by the City of Sandy Springs CCTV camera at this intersection, depict the safety and operational issues at this intersection.



Picture 1: Looking north. Southbound left turn queue spilling back into, and blocking the southbound inside lane. The northbound left turn lane into the condominiums is also blocked.



Picture 2: Looking north. Southbound left turn queue spilling back into, and blocking the southbound inside lane. With the northbound left turn lane blocked, a motorist is stopped in the northbound inside through lane while attempting to turn left.

# **Conclusion and Recommendation**

There are apparent safety and operational issues at the intersection of SR 9 and Glenridge Drive. The intersection has an undesirable skew angle. Additionally, there is a condominiums driveway approximately 160 feet north of the intersection on the west side of SR 9, resulting in inadequate storage length for the southbound left turn, onto Glenridge Drive, as well as the northbound left turn lane, onto a condominiums driveway. This causes queue spillbacks into the inside through lanes in both directions limiting the capacity of the intersection and causing a hazardous unsafe condition. The following are short term and long term improvement options to address the safety and operation issues at this intersection.

#### Short Term Option:

As a short term measure, it is recommended to prohibit the northbound left turns into the condominiums on the northwest quadrant of this intersection and change full access to the condominiums into a right-in right-out access. This also includes removing the tubular pavement markers and extending the southbound left turn lane to the appropriate storage length. This will greatly improve safety and operations at the intersection and eliminate blockage of the inside through lanes in the northbound and southbound directions experienced currently due to spillbacks. The challenge of accomplishing this improvement option is converting the condominiums driveway into a right-in right-out access. A concept schematic of this recommended improvement is provided in the Appendix.

## Long Term Option:

For a long term measure, it is recommended to realign Glenridge Drive so as to line it up with the condominiums' driveway, changing the intersection from a 3-legged signalized intersection into a 4-legged signalized intersection. This will provide a more appropriate intersection angle as well as adequate left turn lanes in the northbound and southbound directions. Additionally, this improvement option has the advantage of retaining full access for the condominiums; however, it is a major reconstruction of the intersection and will require right-of-way acquisition. A concept schematic of this recommended improvement is provided in the Appendix.

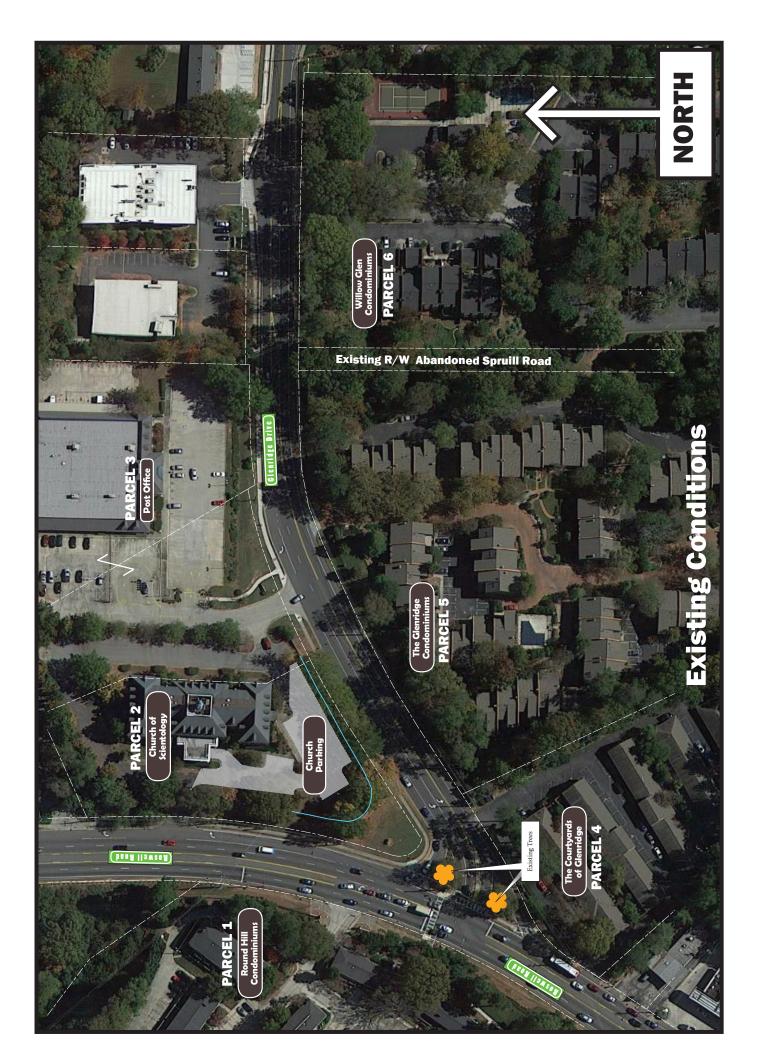


Qk4, Inc. Glenridge Drive at Roswell Road

# **Intersection Alternative Analysis**

**City of Sandy Springs December 11, 2013** 





# Glenridge Drive at Roswell Road Sandy Springs, Georgia

This document contains two alternatives for the Glenridge Drive/Roswell Road intersection realignment, each has been developed as part of this project have certain features in common. These common features are listed below:

- Relocate the Glenridge Drive approach north along Roswell Road in order to line up with the Round Hill Condominiums access roadway, forming a single four-legged intersection.
- Flattens the horizontal curve on Glenridge Drive as it approaches Roswell Road from the east.
- Eliminates the corner islands at the existing intersection and provides a northbound right-turn lane approaching the intersection on Roswell Road.
- Eliminates the full-movement entrance to the "Courtyards of Glenridge" along the Glenridge Drive approach in southeast quadrant of the existing intersection and replaces it with a right-in-right out driveway to the relocated Glenridge Drive approach. The right-in-right-out movement restriction would be enforced by construction of a raised median divider along the Glenridge Drive approach.
- Maintains the wall and existing parking in front of the Scientology building in the northeast quadrant of the intersection.
- Provides room to for a minimal left-turn storage lane into the "Courtyards of Glenridge" entrance along Roswell Road.

The following pages graphically show the three alternatives along with highlights of the differences for each.



#### Alternative A

- Relocates the Glenridge Drive approach approximately 130' north along Roswell Road.
- Improves the radius of the approach curve on Glenridge Drive to 225', which is a substantial improvement over the existing 90' radius along the existing approach curve. A 90' radius meets design speed of 20 MPH assuming 4% maximum superelevation. 225' would meet approximately 28 to 29 MPH, which is much closer to the posted speed of 35 MPH.
- Would likely be the least expensive alternative of the three discussed in this report. It is laid out to provide new sidewalks on both sides of relocated Glenridge Drive, while avoiding damage or relocation to the existing brick wall in front of the Scientology Building.
- This alternative would provide an 80 degree intersection (skew) angle between Roswell Road and Glenridge Drive, while a 70 degree angle would be provided between the Condominium approach and Roswell Road. This change in direction is relatively minimal and not be noticed by vehicles continuing across the intersection between the Condominium driveway and Glenridge Drive.

#### **Construction Cost Estimate**

Traffic Control	1	LS	30,000	30,000
Grading Complete	1	LS	35,000	35,000
Grassing/Erosion Control	1	AC	10,000	10,000
Sidewalks	1400	SY	30.71	42,994
Asphalt Pavement	1120	SY	35.00	39,200
Overlay	5000	SY	15.00	75,000
Curb and Gutter	2070	LF	14.75	30,532
Driveway Concrete	414	SY	34.69	14,361
Concrete Median	65	SY	43.52	2,828
Traffic Signal	1	EA	125,000	125,000
Striping	1	EA	15,000	15,000

Construction Total \$419,917

#### **R/W Estimate Total**

,			14 11 2001111000				
			Right-of-Way	7,636 SF	\$20 SF	\$152.	720
Parcel 1			Easement	15,721 SF	\$10 SF	\$157,	210
Right-of-Way	1965	SF					
Easement	4754	SF		Ri	ight-of-Way	Total	\$309,930
Parcel 2					,		
Right-of-Way	5274	SF					
Easement	2003	SF		Hilita	Relocation	Total	\$100,000
Parcel 3				Othity	Relocation	10141	\$100,000
Right-of-Way	0	SF					
Easement	0	SF					
Parcel 4					Sub	Total	\$829,847
Right-of-Way	397	SF					
Easement	1031	SF					
Parcel 5				:	20% Conting	gency	\$165,970
Right-of-Way	0	SF					
Easement	4584	SF					
Parcel 6					Grand	Total	\$995,817
Right-of-Way	0	SF					
Easement	3349	SF					



#### Alternative C

- Provides dual southbound left-turn lanes on the Roswell Road approach and two eastbound receiving lanes on eastbound Glenridge Drive as it leaves the intersection.
- The Glenridge Drive alignment as it approaches Roswell Road is the same as for Alternative A, but with an additional eastbound lane provided on the south side of the roadway, and 11' lanes on Glenridge Drive in order to minimize the potential roadway footprint. As with Alternative A, the intersection would be located 130' north of the existing intersection and the approach curve on Glenridge Drive would have the 225' radius and leave the existing brick wall undisturbed.
- The additional eastbound lane on Glenridge Drive would be carried for a distance of at least 500' east of the intersection, from which the right lane would then merge into a single through lane. This Alternative would provide for a potential widening of the entire Glenridge Drive corridor to a four-lane facility.
- Project limits of Glenridge Drive are extended approximately 400' further east.
- The northbound deceleration lane on Roswell Road north of the intersection is eliminated to make room for the duel southbound lefts turning onto Glenridge Drive.

Traffic Control	1	LS	30,000	30,000
Grading Complete	1	LS	35,000	35,000
Grassing/Erosion Control	1	AC	10,000	10,000
Sidewalks	1400	SY	30.71	42,994
Asphalt Pavement	1500	SY	35.00	52,500
Overlay	10,000	SY	15.00	150,000
Curb and Gutter	2270	LF	14.75	33,483
Driveway Concrete	414	SY	34.69	14,361
Concrete Median	65	SY	43.52	2,828
Traffic Signal	1	EA	125,000	125,000
Striping	1	EA	20,000	20,000

Construction Total \$439,110

#### **R/W Cost Estimate**

•						
			Right-of-Way	7,636 SF	\$20 SF \$195	,160
Parcel 1		Easement	15,721 SF	\$10 SF \$174	,310	
Right-of-V	<i>N</i> ay 1965	SF				
Easement	4754	SF		R	ight-of-Way Total	\$369,740
Parcel 2						•
Right-of-V	<i>N</i> ay 5274	SF				
Easement	2003	SF		T 14:11:4-	Relocation Total	\$100,000
Parcel 3				Othity	Relocation Iolai	\$100,000
Right-of-V	Way 0	SF				
Easement	0	SF				
Parcel 4				Sub Total	\$908,850	
Right-of-V	<i>N</i> ay 397	SF				
Easement	1031	SF				
Parcel 5				20% Contingency	\$181,770	
Right-of-V	Way 0	SF				
Easement	4584	SF				
Parcel 6					Grand Total	\$1,090,620
Right-of-V	Way 0	SF				
Easement	3349	SF				



# **MEETING MINUTES**

Construction

Project: Roswell Road @ Glenridge Drive - City of Sandy Springs

Kick-off Meeting – PI#0013194 Purpose:

Place: City of Sandy Springs, Conference Room 4

01/22/2015 Meeting Date:

Prepared By: Jeffrey W. Dyer

Andrew C. Ballerstedt - Qk4 In Attendance:

Jeffrey W. Dyer – Qk4

William "Marty" Martin – City of Sandy Springs W. Wesley Waters – City of Sandy Springs Abraham White – Accura Engineering

Sam Samu – Georgia DOT

The project team, Georgia DOT and City of Sandy Springs personnel gathered for a kick-off meeting to introduce to introduce the Georgia DOT (GDOT) project manager, review the project, and discuss the scope and schedule.

The overall project was discussed in the office prior to the team meeting on site for a field walk-through. Some items of note from the office meeting were:

- Marty gave an overview of the Glenridge Project to date, including previous studies, the proposed concept and funding status. The project will improve the existing intersection of Roswell Road @ Glenridge Drive by realigning the Glenridge Drive approach to line up with a driveway opposite the intersection. The horizontal alignment will be improved, turn lanes added, and two existing signals consolidated into one signalized intersection. This project will follow the GDOT PDP process. Qk4 is the designer for this project.
- Sam, the GDOT project manager, requested a document or email that shows District 7 approval of the proposed lane configuration.
- According to the current GDOT schedule, the Concept Report will need to be submitted by September,
- Sam will need to be copied on all ongoing progress and communications for this project. A monthly progress report that is prepared as part of the Qk4 invoice to Sandy Springs will be sent to Sam.
- The current GDOT schedule calls for a PIOH in December, 2015. In addition, Sandy Springs may hold a fact-finding PIOH either "in-person" or on the web as a virtual PIOH as early as March. All PIOH's will be coordinated by Sam, in conjunction with GDOT Office of Environmental Services. PIOH Fact Sheets and other handout materials will be sent to Sam for GDOT for review.
- Potential risks to schedule include the possible need for an easement from the post office along Glenridge Drive, a likely Design Exception needed for the horizontal approach curve along Glenridge Drive, and potential environmental issues that may crop up during the course of the project.



# **MEETING MINUTES**

Construction

- The project is proposed to have pedestrian lighting. A lighting agreement will be needed between the City of Sandy Springs and GDOT.
- Marty will get the survey letter to Qk4.
- The City of Sandy Springs must decide by the PFPR if project will be local let or not. Currently it is proposed to be GDOT let.
- Sandy Springs will pay for Right-of-Way Acquisition on this project.

The team met in the field at the project and reviewed the site. Key items discussed included:

- Potential Utility Conflicts.
- Right-of-Way acquisition issues related to the Scientology Building, located in the NE quadrant of the intersection. All or part of the right-of-way may be acquired as part of the right-of-way donation for their redevelopment.
- Extent of project limits and the use of existing pavement along Roswell Road for lane reallocation at the proposed intersection.